



AIR CONDITIONING & REFRIGERATION News

THE NEWSPAPER OF THE INDUSTRY

Vol. 58, No. 17

December 26, 1949

Serial No. 1084

Reentered as second-class matter October 3, 1936 at the post office at Detroit, Michigan, under the Act of March 3, 1879.
Trade Mark Registered U. S. Patent Office. Copyright, 1949, by Business News Publishing Co.

INSIDE DOPE

by GEORGE F. TAUBENECK

Stories of the Week
French Story
Add Salesman Stories
How To Select Salesmen
Aptitude Testing
Testing Can Go Wrong
From Our Mailbag
All In a Day's Work
Like Father, Like Son
Americana
Tag-End Story

Stories of the Week

Many people call the office of Federal Labor Conciliator Cyrus Ching to inquire whether or not he's Chinese.

His secretary has a standing order to answer:

"No, he's not Chinese. He's three parts Scotch and one part soda."

A stunning redhead appeared at a party in one of those low-and behold gowns which are the current rage. Fellow who danced with her seemed quite distracted by the plunging neckline. Any moment, he worried, it might slip off her shoulders.

"Er, that's a daring dress you're wearing," he stammered. "Doesn't it bother you a bit?"

"Not at all," retorted the redhead. "Does it bother you?"

"What have you got in that bag?" the customs officer snapped.

"Only my night things," smirked Tim Traveler.

"What do you mean, 'night things,'" snarled the official upon opening the luggage, "here's a bottle of whiskey!"

"Yeah, that's my night cap."

French Story

To ameliorate their reception of American tourists, Paris merchants and hotel proprietors decided to greet them in English. Some results were curious distortions of the language of Shakespeare.

For instance, one modiste on the Rue de Rennes displayed a notice in her shop window: "For Sale: Dresses for Night Life and Street Walking."

There is a typewritten sign in the lobby of a hotel in the Latin Quarter which reads: "Guests are invited to make noise after 10 p.m. as little as possible."—*France-Amerique*.

Add Salesman Stories

Into Franklin F. Finkelbaum's New York department store walked a small man and his dumpy wife. After many rebuffs they found their way into the private office of old F. F. F. himself.

"This is a right fine place you have here," commented the seedy little fellow. "How much money do you want for it? What will you sell it for to me and the Missus?"

"I'll take eighty-five million dollars cash for the whole layout," garbled the tycoon, who was not only Tired of It All, but felt like Having a Little Joke.

"Leave us look around if we might," parried the dumpy little woman.

"Go right ahead. Take your time."

And F. F. Finkelbaum almost grinned for the first time in 20 years.

Whereupon the untoward couple made a cursory investigation of the premises.

Fapa was enthusiastic after this tour. Wanted to buy the whole shebang right away.

"Mama," he ordered, "take a taxi and bring here one of our money-sacks—the little one, mind you, the sack with the five-hundred dollar bill."

"Nuh-uh," countermanded Mama. "No deal. Nice store, yes. But no place to live upstairs!"

Deciding that the weather was a trifle chilly for September, a certain sales executive donned a heavy topcoat. As he meandered from a parking lot toward his office he stuffed his hands into that coat's pockets.

(Concluded on Page 6, Column 1)

Code Violations on GM Interest In Kinetic Is Sold Detroit Draw Fire

DETROIT—Several violation notices have been handed out to Detroit contractors in the past few days by the city's Bureau of Safety Engineering because of alleged violations of requirements for fusible plugs in certain refrigeration and air conditioning installations.

Detroit has been somewhat of a "storm center" in the industry since September of 1947 when the Safety Engineering bureau headed by John C. Rehard, chief safety engineer, first issued its requirement that fusible plugs must be rated at 210° F.

After the initial announcement, the bureau decided in conferences with contractors, suppliers, and manufacturers to hold off immediate enforcement of the new requirement pending revision of the ASA B9 code, but was assured cooperation by the industry in the meantime, according to Rehard.

Manufacturers agreed to mark all plugs with their melting temperatures, Rehard explained.

Recent laxity along these lines resulted in the current "crackdown," it was indicated.

Since the original 210° fusible plug requirement, the Detroit bureau's thinking has been modified somewhat so that 285° fusible plugs may receive city approval, provided they are in accordance with the "Syd James Formula."

This formula, which will probably be included in the B9 code in its (Concluded on Back Page, Column 4)

NFFLA, FFLI Agree To Joint Convention

ST. LOUIS—A joint convention of the National Frozen Food Locker Association and the Frozen Food Locker Institute will be held Sept. 10 to 13 inclusive at the Palmer House, Chicago, it was announced by executives of both organizations. This exposition to be known as the National Frozen Food Locker Convention will be under the auspices of both groups. Several weeks of negotiations between top officials of the two organizations were climaxed on Dec. 13 when it was revealed that they were combining their efforts to sponsor one national convention during 1950.

All locker operators, manufacturers, contractors, and suppliers will be invited to partake of this great (Concluded on Back Page, Column 3)

Twist Is Asst. Sales Mgr. at Sherer-Gillett

MARSHALL, Mich. — Announcement has been made by Sherer-Gillett Co. of the appointment of John S. Twist as assistant sales manager.



Following his graduation in 1941 from Michigan State college, where he majored in economics and business administration, Twist entered the army that same year. After nearly five years of service, he returned with the rank of major, and joined Sherer-Gillett Co. as factory salesman. Since 1948 he has functioned as a territory supervisor and sales representative.

GM Interest In Kinetic Is Sold

DETROIT—General Motors Corp. has announced that it has concluded negotiations to sell its 49% interest in Kinetic Chemicals, Inc., producer of "Freon" refrigerants, to E. I. du Pont de Nemours & Co., which owns 51% of the stock.

The sale is subject to Securities & Exchange Commission approval, but it is considered unlikely that there will be any opposition to the sale, particularly in view of the fact that the government in an anti-trust suit last summer asked that General Motors sell its interest in Kinetic Chemicals.

Kinetic Chemicals was founded in 1930 by the two corporations to manufacture "Freon" refrigerants for the refrigeration and air conditioning industry. Manufacturing plants are operated at Deepwater, N. J., and at East Chicago, Ind.

Kinetic, which had total assets of \$12,356,635 as of Sept. 30, will pay \$9,432,250 to General Motors for its 9,800 shares of Kinetic common capital stock.

October Household Sales Drop Sharply

NEW YORK CITY—October world refrigerator sales as reported by 12 companies of the National Electrical Manufacturers Association were 33% under those of the same month last year, the association reported recently.

Totaling 265,575 units, the October figure also was 18% below September, which was contrary to last year's experience. Then, October sales were 11% over September.

The sharp October decline brought sales for the year to date below the 1948 level for the first time in several months. Sales for the first 10 months of this year numbered 3,349,526 units as compared with 3,438,835 for the same period last year.

The difference between the two figures is more than accounted for by the apparent drop in production of units of 7-cu. ft. capacity. Last year, more than 1,000,000 units of this size were sold in the first 10 months. This year, only 792,424 units have moved out from the factories.

Foreign sales by these companies reflected the downward trend of the domestic market.

Record Frozen Food Sales Seen If Displays Improve

NEW YORK CITY—Predicting that the frozen food industry will set an all-time record with an output of about one billion pounds this year and that this figure will be substantially increased next year, C. Courtney Seabrook, vice president of Seabrook Farms, frozen vegetable processor, again raised the cry for better methods of displaying frozen foods in retail markets.

He expressed confidence that in the future some method will be developed to display frozen products at eye level. It is his opinion that requiring the customer to stoop and sort packages in present type cabinets is slowing sales of frozen foods.

Seabrook declared that "now the (frozen food) industry has reached a stage of development where demand is beginning to pass supplies in some items. It is my personal belief that during 1950 consumer demands will be greater than over-all industry production."

ASHVE Meeting, Southwest Show Set To Open Jan. 23

DALLAS, Tex. — With nearly 200 firms planning to exhibit, the Southwest Air Conditioning Exposition to be held here Jan. 23 to 27 will focus attention on the fastest growing air conditioning market in the country.

Sponsored by the American Society of Heating & Ventilating Engineers, which will hold its fifty-sixth annual meeting here at the same time, the exposition will be staged in the Hall of Agriculture and Poultry building at State Fair Park.

After the opening at 2 p.m. Monday, Jan. 23, the show will be open to the industry, but not the public, from noon until 10 p.m. Tuesday through Friday.

Considerable emphasis on package air conditioning is expected in the exhibits, but there will also be a large proportion of heating equipment on view, particularly gas-fired items since natural gas plays so important a role in the economy of the Southwest.

Among the self-contained units to be featured is a portable evaporative cooler mounted on ball-bearing rollers that can be moved readily from room to room. This machine holds 11 gal. of water and is claimed to diffuse air at the rate of 1,800 c.f.m. It is housed in a hammered brown enamel case.

Despite the emphasis on package units, however, the greater part of the exhibits will feature component (Concluded on Back Page, Column 1)

Licensing Stand of Milwaukee Paper Hit

MILWAUKEE—Continued opposition of the Milwaukee Journal to a proposed city ordinance which would require licensing of refrigeration contractors has brought forth a plea to the newspaper for "a fair and impartial presentation of the facts surrounding this issue" from the Milwaukee Refrigeration Contractors Association.

The Journal's charges that "the only reason on earth for this license is to give refrigeration contractors a monopolistic hold on their field of work" are described by E. D. Merritt, executive secretary of the contractors' group, as "an insult to the men that served on the . . . committee" [which drafted the license].

"Their only consideration was public health and safety. Surely you wouldn't say that the Journal has no regard for public health and safety!" Merritt writes.

" . . . you have stated that the proposed ordinance was drafted by the contractors themselves," he also tells the newspaper. "Actually it was drafted by a committee set up by common council resolution."

"This resolution reads as follows: 'Resolved, by the common council of (Concluded on Page 4, Column 1)

Truman Reported Ready To Urge Excise Tax Repeal

WASHINGTON, D. C.—President Truman has decided to recommend repeal of some wartime excise taxes, according to reports in Washington and in Key West, where the Chief Executive was working on his Budget and State of the Union messages. However, it was said that he would recommend new taxes to compensate for the revenue lost through repeal of such levies.

Defrost System Is Westinghouse Feature for '50

8-Model Refrigerator Line, New Top-Loading Washer, 'Knee-Hole' Range Bow

MANSFIELD, Ohio—A new type of a fully automatic defrosting household electric refrigerator, a "knee-hole" electric range, and a new front-opening, top-loading, fully automatic dishwasher have been introduced by the appliance division of the Westinghouse Electric Corp. for 1950.

The automatic defrosting feature is incorporated in the two top models of the company's eight-model refrigerator line. According to the manufacturer, it automatically prevents accumulation of frost on the freezer and eliminates the defrosting chore for the housewife.

The action is so fast, Westinghouse makes claim that ice cream and ice cubes do not soften and safe temperatures are always maintained in the freezer and main food compartments.

Defrost water is disposed of automatically so that the housewife usually is not even aware that the refrigerator is defrosting, the company added.

Key to the frost-free system, which was 10 years in the laboratory and for which patents now have been issued, is the fact that the refrigerator door is opened 60 times daily in the average household. A mechanical counter keeps tab and, on the 60th door opening, sets the defrosting mechanism to work.

This feature has been placed on the ADA 96 model carrying a suggested retail price of \$399.95 and the DA 84 with a price of \$309.95. Both these models also have a butter conditioner and horizontal freezer compartment.

The new electric range, called the "Rancho," is said to be the lowest priced standard range produced by Westinghouse since the war. It carries suggested retail price of \$159.95.

Unusual feature of the Rancho is that it somewhat resembles a knee-hole desk with a U-shaped chrome tube leg on the right side and the oven and storage drawer on the left. The knee-hole space is intended to provide storage room for a stool or other object that usually clutters up a small kitchen.

Designed for small kitchens, the Rancho has four surface cooking units, work surface, and full size oven.

The new Westinghouse dishwasher, (Concluded on Back Page, Column 2)

California Court Rules Against Local Licensing

LOS ANGELES—Sections of a municipal ordinance that require all refrigeration and air conditioning contractors desiring to do business in the city to pass an examination and pay special license fees, even though already qualified by the state, have been held invalid by a Superior Court judge.

The decision was made as the result of a suit filed against the City of Los Angeles by E. F. Hill of Refrigerating Equipment & Supply Co., San Bernardino, to test the validity of the sections. The suit was a test case sponsored by the Refrigeration Contractors Association, Inc., here.

Hill holds both a C-38 (refrigeration) and a C-20 (heating, ventilating, and air conditioning) license from the state registrar of contractors. He sued for the right to engage in the refrigeration and warm air heating contracting business in Los Angeles without being required to take a city examination and pay the city registration fees (\$25 a year for refrigeration and \$60 for warm air heating).

The case was tried before Superior Court Judge George A. Dockweiler of Los Angeles County. In his judgment, Judge Dockweiler:

1. Held that Sections 95.4300 through 95.4308 of the Refrigeration Code and Sections 95.00 through 95.05 of the Heating & Ventilating Code are invalid as applying to a (Concluded on Page 4, Column 3)

'Idea Pool' on Cutting Expenses Proves Effective Way To Tighten Store Operation

ST. LOUIS—That the appliance retailer can show extra profits through cutting "unsuspected" expenses has been proven by the experience of a number of stores here, which have banded together their ideas for "economical operation."

After experimenting over a period of six months, five definite methods in which every appliance store can cut costs, to realize better returns from sales volume were developed. These were:

1. Cutting down on "charity advertising." Almost every appliance retailer several times during the year, is subjected to appeals for "taking an advertisement" in church programs, local newspapers, special publications, etc.

These may seem like inexpensive bits of goodwill, but totaled up they can amount to a surprisingly large percentage of total advertising expense—and most of it wasted.

2. A downtown St. Louis appliance store has found that operating its own delivery trucks, was a "wasted expense" which had never been closely checked before.

Figuring the initial cost of the truck, its upkeep, licenses, personal taxes, wheel taxes, and other charges, it was found that operating its own trucks cost almost three and a half times as much per appliance delivered as hiring an express truck to do the same job.

Therefore, the company has sold the truck and now, when an appli-

ance is sold, merely arranges with a trucking concern to make the delivery, and pick up trade-ins.

Costs per operation amount to less than \$3, where deliveries within the city limits are involved—because of the large volume of business.

A saving of at least two thirds of delivery cost when all factors are figured in, has thus been effected.

3. People Furniture Co., large-scale appliance dealership, pays each of its five outside specialty salesmen a commission which runs from 10 to 20%—far higher than average.

"By paying much higher salaries, we attract efficient, contented salesmen, who can be depended upon to stay on the job, and apply themselves more diligently," it was stated.

"The amount of additional volume brought in, in direct ratio with the extra hours expended, has made every cent paid in extra payments to salesmen a decided boost for volume."

4. Doing away with expensive printed forms, and letterheads, which were used unnecessarily has resulted in a substantial saving for Corey Appliance Co., a small neighborhood organization.

Formerly, the store spent as much as \$90 per season on contract forms, letterheads, invoices, etc., which, although handsome, were frequently used up as scratch paper.

Using instead a mimeograph to print up plenty of low-cost forms, has proven an effective saving.

Mfr. Warned on Sale of Immersion Water Heater

WASHINGTON, D. C.—The Federal Trade Commission here recently ordered Autonator Laboratories Co. of Chicago to stop selling its water heating device without warning purchasers that it is potentially dangerous unless directions for use are strictly adhered to.

The water heating device, called the "Hot Donut Water Heater" is an immersion electrode unit with the heating element in direct contact with the water.

Under some conditions, the FTC said, the unit "constitutes an electrical hazard in that intolerable amounts of electricity may flow through portions of the human body and electrocution is possible."

It required that the word "caution" or "warning" must be indelibly imprinted or affixed to the device along with adequate directions.

It also told the company to stop claiming that the heater would produce boiling water in "a jiffy."

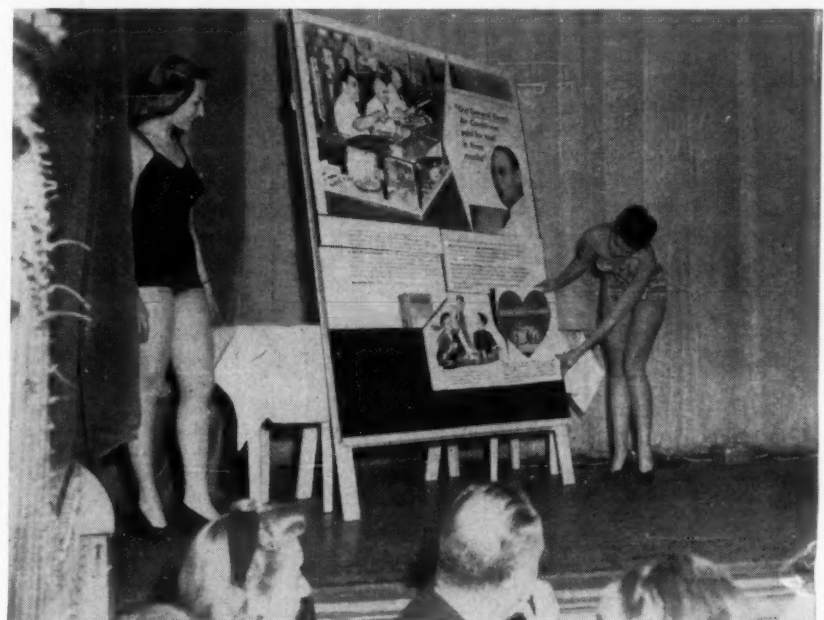
Gennett Elected President Of Delta Wholesaler Group

BILOXI, Miss.—Robert Gennett of Birmingham, Ala., was elected president of the Delta States Refrigeration Wholesalers Association at the close of the two-day annual convention held at the White House here Dec. 8 and 9. Harry A. Dawson of New Orleans, was named vice president, and Miss Hazel McQuiston of Memphis, secretary.

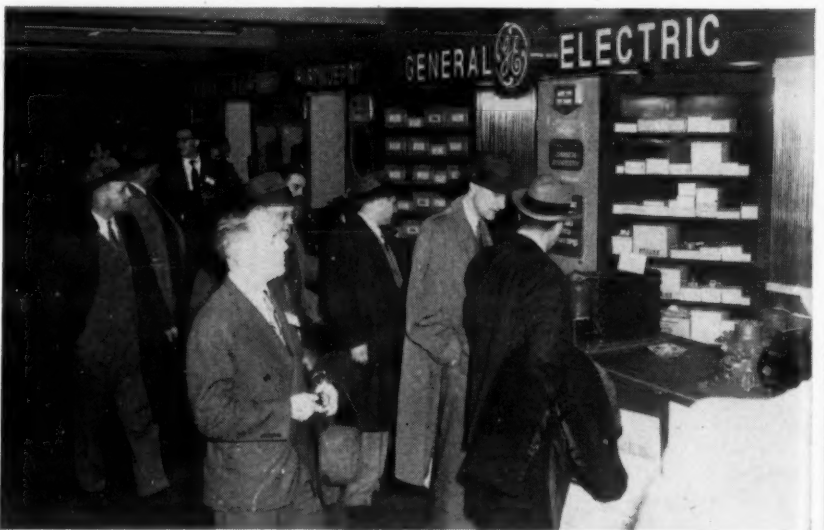
Fred Waring Troupe Attends G-E Commercial Meeting In N.Y.



Distributors of General Electric Co.'s Air Conditioning Department gathered in New York City recently for their annual sales conference. On the evening preceding the meeting, they watched the Fred Waring television show in the CBS Television Theater, then moved on to the Hotel Waldorf-Astoria's Jade Room where a reception was held for them and the Waring organization. Pictured at the latter event are R. Cooper, Jr., distributor, Chicago; H. M. Brundage, manager of the automatic heating division; Mrs. Cooper; H. B. Donley, manager of marketing; H. J. Wines, manager of automatic heating sales; Jane Wilson, of the Waring group; Carl G. Hokanson, distributor, Los Angeles; and Harold F. Smiddy, vice president of G-E and general manager of department.



Next day at the meeting in the 48th St. Theater, extensive advertising and sales promotion plans were previewed. Here, two models "build" one of the 24 advertisements that will be published in *The Saturday Evening Post* next year.



After the meeting, 10 chartered buses took the distributors to Bloomfield, N. J., for a plant tour during which they saw a complete product display, including the typical parts depot set-up above. During the meeting, distributors learned that G-E's hermetically-sealed condensing units will be sold through parts depots in 1950.

Commercial Mfrs. Agent Set Up In Southeast

RICHMOND, Va.—American Engineering Co. has been formed here to operate as a manufacturers' agent, it was announced recently by Harry L. Sizer, president and sales manager.

Ralph E. Hyatt is secretary and treasurer of the firm, located at 1222 Bainbridge St.

Sizer, a veteran sales and designing engineer, said American Engineering has signed contracts with several prominent manufacturers for the exclusive sale of their equipment in Virginia, North Carolina, and the District of Columbia. He added that the concern plans to offer a complete line of equipment to air conditioning and refrigeration contractors.

The firm plans to establish a branch office in Washington, D. C. A sales engineer yet to be selected will be in charge.

Burke Heads Vending Machine Operations at Minute Maid

NEW YORK CITY—Appointment of William E. Burke as manager of vending machine operations of Minute Maid Corp. was announced by the frozen citrus juice packing firm. Burke formerly owned his own soft drink vending business.

NIAGARA

AEROPASS CONDENSER

FOR LOWER COST REFRIGERATION
... saves cooling water, prevents operating troubles, saves labor. It cuts the operating cost of freezing, cold storage or air conditioning. It reduces power bills because compressors run at lower head pressure. Write for Bulletin 103. Address Dept. AC.

NIAGARA BLOWER COMPANY
405 Lexington Ave. New York 17, N.Y.

**THE
LAST WORD
IN SELF-SERVICE
REFRIGERATORS
FOR
FROZEN
FOODS!**

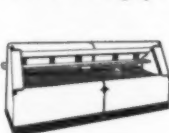
SEE FOR YOURSELF HOW IT LOOKS... HOW IT WORKS... HOW IT SELLS!

THE SENSATIONAL NEW KOCH MODEL 1407



- ! Will hold approximately 450 standard frozen food packages or up to 90 gallons of pint ice cream packages.
- ! All steel construction. Heavy insulation. Porcelain, dulux, and stainless steel exterior. 4-pane, plate glass front.
- ! Full length plate glass mirror and illuminated plastic display sign double the display impact.
- ! Exclusive Koch "Frost-Magnet" furnishes a service-free solution to the defrosting problem.
- ! Sweat-free, stainless steel price-tag molding holds full 3-in. combination tags and labels.
- ! Completely assembled and factory-tested. Simply hook up the lines and it's ready for outstanding performance.

**Write
for Details
and Open
Territories**



There is a Koch Refrigerator or Display Case for nearly every type of refrigerator use... and more are coming. The models shown here are representative... but there are many other sizes and styles.

KOCH Refrigerators

NORTH KANSAS CITY 16, MO.

SINCE 1883



"I've just seen the 1950 Kelvinators—
Boy, they've done it again!"



GET MORE

Get **Kelvinator**

...THE MOST VALUABLE FRANCHISE IN THE APPLIANCE INDUSTRY

KELVINATOR, DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT 32, MICHIGAN

Milwaukee Licensing Controversy--

(Concluded from Page 1, Column 4) the city of Milwaukee, that the president of the common council be and hereby is requested to appoint a special committee to draft a refrigeration ordinance, to consist of the following: The chief of the fire department, the inspector of buildings, two members of the Milwaukee Refrigeration Contractors' Association, two labor representatives, two citizens, and the city attorney or some member of his staff designated by him.

"Most refrigeration machines operate under very high pressure and most of them use gases which are either toxic or inflammable, sometimes both. There are several hazards in connection with refrigeration machines—the hazard of injury to persons from flying parts or ruptured machinery, possible suffocation or extreme illness from breathing escaping gases, chemical burns as a result of direct contact with the skin, and the ever present danger of fire or explosion due to the inflammable nature or chemical reaction of many refrigerants. Our fire department files list hundreds of cases that offer positive proof of these hazards.

"The state refrigeration plant code (effective May 11, 1949) lists 19 refrigerants of which 11 are either restricted or prohibited in their application. The state air conditioning code (effective April 11, 1936) lists 19 refrigerants of which 15 are either restricted or prohibited for air conditioning purposes.

"The state refrigeration and air conditioning codes would provide substantial minimum installation standards if they were enforced but the enforcement of even these minimum standards is left pretty much up to the cities themselves. Not many people would obey our parking or traffic laws if we had no police department, traffic court, or drivers' license.

"Another article stated that this ordinance would increase the cost to the customer. It is hard to believe that an average permit fee of \$3 that is used to offset the cost of inspection will greatly increase the cost of installation of equipment that is valued from several hundred to many thousands of dollars. The customer is assured of getting equipment that

is properly installed in accordance with the state code requirements by experienced, competent persons, properly representing their equipment and service. Remember that the cost is increased to the customer when a job is installed or serviced by persons who are inexperienced, incompetent, negligent, or who deliberately misrepresent their equipment or service.

"A fair and impartial presentation of the facts surrounding this issue is all that we ask. An informed general public speaking through its representatives in the common council will decide whether or not it wants the protection and safety the proposed ordinance affords," Merritt told the Journal.

Dealers Reminded of Advantages of Operating Business on Fiscal Basis

CHICAGO—Appliance dealers do not necessarily have to take their inventories and file their income tax returns at the end of the year, Distributor Harry Alter here reminded them recently.

In commenting, Alter said: "Most dealers close their books on Dec. 31 and file their income tax as of that date. After a busy, often hectic, Christmas rush, it is no fun to start taking inventory.

"Not every dealer knows that he can close his books any other time that suits him best, and file his income tax return as of that date.

"This is called closing on a fiscal basis as against a calendar basis. A good date for an appliance dealer to close his books, we think, would be Aug. 31.

"August is one of the low months. It is followed by a Labor day weekend, and dealer inventories and accounts receivable are generally at low ebb. Thus his balance sheet would show greater liquidity, a desirable thing for those using bank credit.

"To make a change from a calendar to a fiscal basis, it is necessary to obtain approval from the U. S. Revenue Department. Any experienced accountant can arrange this."

Local Licensing --

(Concluded from Page 1, Column 5) contractor holding a valid and unrevoked C-38 and/or C-20 license from the State of California.

2. Permanently enjoined the city from enforcing or attempting to enforce these sections of the code against a state-licensed contractor.

In a letter to its members regarding the case, the Refrigeration Contractors Association pointed out that "Of course, the judgment and injunction only names the plaintiff contractor . . . but we are confident that the ruling applies generally to all state-licensed contractors."

Since test cases in other crafts have put an end to dual licensing procedures throughout the state, it was felt that the decision, if not overruled, would be respected by all other municipalities.

The city has 60 days in which to appeal the judgment before a higher court.

"At this time," the association told its members, "we have no knowledge of the intentions of the city attorney's office on the filing of an appeal."

Believing that a state license should permit a contractor to operate anywhere in the state, the association decided during the latter part of 1948 to sponsor a test case on the matter in order to obtain a court ruling. The decision was reached after the group's legal counsel concluded that the sections of the code in question were not valid in view of two previous dual-licensing cases decided by California courts.

One was the case of Horwith vs. the City of Fresno, involving an electrical contractor. The decision in this case set a precedent for electrical contractors' licenses.

The other was the case of the City & County of San Francisco vs. Boss, a painting contractor. This resulted in the termination of local licenses for painting and decorating contractors.

Approximately 30 members of the Refrigeration Contractors Association agreed to underwrite the legal costs in the Hill case. Commenting on the successful outcome of this litigation, the association noted that the decision "will have the effect, we are sure, of saving all state-licensed members an appreciable sum."

NEMA Refrigerator Sales Dip to 265,575

Complete Refrigerators Only
(Lacquer and Porcelain Exterior Cabinets) (Advertised Sizes)

OCTOBER (12 Companies)				
Sizes	Domestic (48 States and D. C.)	Canadian	Other Foreign	Total
1. Less than 4 cu. ft....	438	....	....	438
2. 4 cu. ft.	3,818	....	652	4,470
3. 5 cu. ft. ....	....	....	....	....
4. 6 cu. ft.	41,639	....	2,543	44,182
5. 7 cu. ft.	74,392	27	3,878	78,297
6. 8 cu. ft.	63,298	....	3,877	67,175
7. 9 and 10 cu. ft.	61,342	....	1,912	63,254
8. 11 and 12 cu. ft.	7,653	....	106	7,759
9. 13 cu. ft. and up....	....	....	....	....
10. Total	252,580	27	12,968	265,575

FIRST 10 MONTHS (12-13 Companies)

Sizes	Domestic (48 States and D. C.)	Canadian	Other Foreign	Total
1. Less than 4 cu. ft....	2,036	....	2	2,038
2. 4 cu. ft.	22,391	....	2,439	24,830
3. 5 cu. ft. ....	....	....	....	....
4. 6 cu. ft.	438,883	....	33,144	472,027
5. 7 cu. ft.	764,919	28	27,477	792,424
6. 8 cu. ft.	1,034,834	4	38,769	1,073,607
7. 9 and 10 cu. ft.	819,215	2	20,131	839,348
8. 11 and 12 cu. ft.	141,577	....	3,639	145,216
9. 13 cu. ft. and up....	35	....	1	36
10. Total	3,223,890	34	125,602	3,349,526

Participating companies: Admiral Corp.; Avco Mfg. Corp.; The Coolerator Co.; Fridaire Div., General Motors Corp.; General Electric Co.; Gibson Refrigerator Co.; Hotpoint, Inc.; International Harvester Co.; Kelvinator Div., Nash-Kelvinator Corp.; Norge Div., Borg-Warner Corp.; Sanitary Refrigerator Co.; Westinghouse Electric Corp.; Stoddard Mfg. Co. (out 5-1-49).

Westinghouse Plans To Increase Production Of Appliances 15% In First Quarter of '50

PITTSBURGH—"At Westinghouse, our appliance output will be increased about 15% during the first quarter of 1950," Gwilym A. Price, president of Westinghouse Electric Corp., declared recently in a year-end statement.

"Inventories of electrical appliances are below normal for this time of year largely due to a sharp pickup in demand in recent months and shortages of steel that resulted from the eight-week steel strike," he explained.

The planned production increase is

intended "to help correct this situation," he affirmed.

J. H. Ashbaugh, vice president in charge of the appliance division, added "We, at Westinghouse, expect about a 20% increase in appliance sales next year over 1949."

He further stated that "because the low year-end inventory position in the electrical appliance business is without parallel for a full production year, the productive capacity of the industry's factories will be in full swing in the first half of 1950 to meet the demands for its products."



HAVE YOU ASKED

...one of the many users of the **402** Thermo Valve about its...

SUPERIOR PERFORMANCE + LIQUID CHARGE + PRESSURE LIMITING
WIDE RANGE ADJUSTMENT + LARGE REMOVABLE STRAINER + COMPACTNESS?

There is no substitute for actual field experience!
SEE YOUR ALCO WHOLESALE.

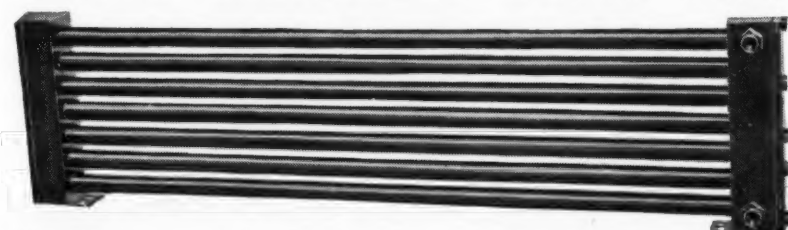


Designers and Manufacturers
of Thermostatic Expansion
Valves; Evaporator Pressure
Regulators; Solenoid Valves;
Float Valves; Float Switches.

ALCO VALVE CO.

853 KINGSLAND AVE. • ST. LOUIS 5, MO.

CONDENSERS For Every Problem and Application ... WITH CLEANABLE WATER TUBES



WATER COOLED CONDENSER

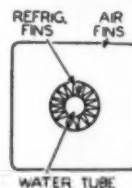
● The Heat-X Water Cooled Condenser . . . small in size and low in cost, equipped with internal fins for high efficiency . . . is a popular condenser where ample low-cost water is available. It is ideal as a booster for existing air-cooled condensers. From 1/3 H.P. to 20 H.P.



WATER TUBE



COMBINATION AIR and WATER COOLED CONDENSER



WATER TUBE

● Uses only air until air temperature rises above 80°F. Saves 94% of estimated water bill.

THE HEAT-X-CHANGER CO., INC.
415 Lexington Avenue, New York 17, N. Y. Brewster, N. Y.

Companies Charged with Fixing Prices of Servel Units Plead 'Not Guilty'

PHILADELPHIA—Four defendants in an anti-trust case here who are charged with conspiring to fix the price of Servel gas refrigerators in the Philadelphia market entered pleas of not guilty last week.

They are the Philadelphia Gas Works, its sales manager Frank H. Trembley, Jr.; Motor Parts Co., and Erich E. Drehme, its vice president.

The two companies were recently indicted by a Federal grand jury as having a monopoly on the wholesale and retail distribution of Servel refrigerators in the local area and of conspiring to fix their prices at levels higher than prevailing in neighboring areas.

The trial is tentatively scheduled for Feb. 17 or 18.

Christmas Traffic Builders

1: Photo Gift-Off: Packs In Visitors

DECATUR, Ill.—To promote store traffic during the Christmas buying season, Ekiss Appliance & Heating Service here offered a free portrait to every family that visited the store during the first 10 days of December.

A photographer was set up in the store to take the pictures, which were to be 5 by 7 in. vignette portraits.

A store spokesman explained that there was no charge whatsoever to the store visitors for this service—it was to be a Christmas gift from the store management. Only restriction was that all children must be accompanied by a parent in order to be photographed.

2: Ad In Shape of Yule Tree Gets Notice

ELMIRA, N. Y.—Don Wright, Inc., appliance dealer at 230 S. Main St., promoted appliances as Christmas gifts with an eye-catching newspaper advertisement in which type was set in the shape of a Christmas tree.

The advertisement was captioned: "The Memory Lingers On."

Copy read: "A jolly good way to remember your family this Christmas is to give something electrical from Don Wright, Inc. Electrical appliances last for years and the cost is small for the pleasure given."

"Choose your gift from our large displays of mixers, toasters, waffle irons, clocks, corn poppers, radios, washing machines, ranges, refrigerators, and dishwashers."

Opening-Day Sale Features 'Introductory Pricing'

CHEYENNE, Wyo.—F. W. Fitch, electrical contractor with headquarters at 1706 Pioneer Ave., has added the Admiral and Apex appliance lines.

Fitch recently staged a three-day grand opening at which special demonstrations were given and free gifts awarded to women.

Fitch said he made arrangements with manufacturers to make special introductory prices on some of the models for one week only. During the week, he allowed \$40 for the customer's old washer on the new Apex, \$75 trade-in on the Admiral Dual-Temp refrigerator on an old icebox or refrigerator, and free normal installation on all automatic washers and electric ranges sold.

Kenmore Automatic Washer Sells for \$214 In Chicago Area

CHICAGO—A new Kenmore automatic washer to retail at \$214.95 in the Chicago area, which is to be a companion piece to the recently introduced Kenmore clothes drier, was announced recently by Sears Roebuck & Co.

The washer is manufactured by the Nineteen Hundred Corp. of St. Joseph, Mich. Its features include a suds saver, six-vane agitator, and a water depth selector. It requires no bolting down.

31 New Products Coming Up

\$50,008,257 In York Sales for 1949 Marks Slight Drop from Last Year

YORK, Pa.—York Corp. has reported that completed sales in the year ended Sept. 30 amounted to \$50,008,257 compared with \$56,494,430 in the previous year, according to President S. E. Lauer.

He stated that earnings after provision for taxes were \$1,617,179 compared with \$3,150,862 in the fiscal year of 1948. These 1949 earnings were equivalent to \$10.11 per share of preferred stock and, after provision for preferred dividends, to \$1.35 per share of common stock.

Lauer pointed out that lower sales during the year were common to the air conditioning and refrigeration industry. "This situation as it affected us, coupled with price reductions we made voluntarily on certain of our product lines in order to clean out inventories to make way for new 1950 models, plus our concentration and expenditures on engineering re-

search, product development, and distribution resulted in our lower earnings for the year," Lauer explained.

"Thirty-one new products, defined by types and sizes were completed by our development department and cleared for production in 1950," Lauer stated.

Working capital on Sept. 30, amounted to \$19,348,048 which was \$1,601,715 less than a year ago, the executive said. He explained that additions to plant and equipment and the decrease in long-term debt were material factors in this reduction.

However, the ratio of current assets to current liabilities increased from 3.26 to 4.23 and cash and government securities together totalled \$4,355,322 compared with \$2,807,027 the previous year.

"This," Lauer stated, "improves the financial position of York Corp. considerably."

The amount of new business reported by the firm was within 13% of last year's total.

York Corp.'s dollar share of industrial and commercial refrigeration and air conditioning, according to figures published by the association representing the majority of the industry, showed a substantial increase over last year.

Inventory was reduced by \$8¼ million from the January peak and almost \$3½ million below Sept. 30, 1948, according to Lauer.

The firm paid out \$15,393,000 in wages and salaries during the fiscal year of 1949, it was learned.

New Bill Tries Again To Curb Massachusetts Utilities' Field

BOSTON—A bill to prohibit Massachusetts public utility companies from selling household appliances has been filed for consideration by the 1950 Massachusetts Legislature by Rep. Charles W. Hedges, Quincy Republican.

Similar proposals have been unsuccessfully introduced in previous Massachusetts state legislative sessions.

Alexandre, Inc. Drops Crosley Distributorship In Central Pennsylvania

HARRISBURG, Pa.—Jules Alexandre, Inc., 619-21 Walnut St., here, has announced that the company has given up its franchise for wholesale distribution of Crosley appliances in central Pennsylvania.

Jules Alexandre, Inc. has been Crosley distributor in central Pennsylvania since the early part of 1943. The company is headed by Jules E. Alexandre and Ben Eby.

It is the intention of both Alexandre and Eby to attend the Chicago and New York market in January and sometime after the first of February they intend to decide whether to continue in the wholesale appliance business or enter into another business.

The building in which the company has been located is jointly owned by Alexandre and Eby. Several prospective tenants are already negotiating for long term leases for this building, it was stated by Alexandre.

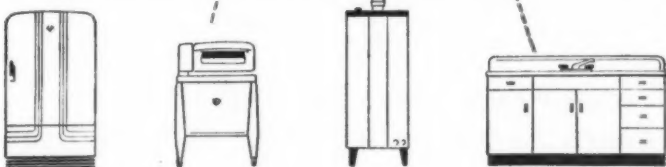
*Sell all types
of difficult
prospects...*

THE INDECISIVE TYPE



USE THE DU PONT SEAL
TO CLOSE THE DEAL

It identifies America's
leading home appliance finish!



Can't make up her mind, eh? Well, it's sure-fire tactics with any prospect to bolster your sales talk by pointing to the "Dulux" seal. It may be all the assurance she needs of a finish that gives years of washable, mar-resistant service and good looks! You can say, too, that "Dulux" is rigidly pre-tested!

If your manufacturer supplies you "Dulux"-finished appliances without the seal, ask him to include it in the future. It helps decide customers... in your favor!

HERE'S SELLING MADE EASIER! FREE new informative booklet gives you profitable "selling points" for appliances finished with DULUX. Send coupon today for your copy!



E. I. du Pont de Nemours & Co. (Inc.)
Finishes Division, Dept. A. C. 912
Wilmington 98, Delaware

Please send, free of charge, your new illustrated booklet, "Inside Information on the Outside."

Name _____ Title _____

Firm _____

Address _____

City _____ State _____

INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1) and unexpectedly found a lacy handkerchief. He pulled it out, and stared unbelievably at purplish lipstick marks.

"Jessul," he gasped. "Where did this come from? What could I tell the Little Woman?"

Quickly he threw the offensive object underneath a parked car.

Nobody saw him discard The Evidence, he noted with satisfaction.

Upon entering his house that evening, Henry was met at the door by an indignant teen-age son.

"Hey, Pa," reproached the boy. "what's the big idea wearing my topcoat today?"

"I'll have the \$3.00 dinner," announced the neophyte salesman, loudly, hoping to impress somebody in the hotel dining room.

"Very good, sir," disdained the waiter, "and would you like that on white bread or whole wheat?"

Selfridge's magnificent department store in London created a sensation and blocked aisle traffic by putting a peephole in a curtained window with this label:

"For the clean minded."

Those who peeped saw a display of bath towels.

"Why is it, George," curiously a Pullman occupant, "that you porters seem to receive smaller tips from obviously rich men than from characters like me?"

"Ah'd guess, suh," George opined thoughtfully, "that the po' people doesn't want folks to know they's po', and the rich people doesn't want folks to know they's rich."

A profound observation, that.

WIRING ASSEMBLIES

Cut Product Wiring Costs!
With Pre-Fab Wiring Assemblies

(Metal and Soft Clad)

Custom Engineered And
Pre-Fabricated For Economical
Installation In:



Domestic Refrigerators
Home Freezers
Reach-In Cabinets
Display Cases
Beverage Coolers
Water Coolers
Milk Coolers
Beverage Dispensers
Food Dispensers
Miscellaneous Appliances and any other Electric or Refrigerating Equipment

YOU CAN CUT
COSTS THROUGH
OUR COMPETENT
ENGINEERING
SERVICE AND
STREAMLINED
PRODUCTION

Complete wiring harnesses engineered and produced by United for dual temperature refrigerator.

NU-BLOK, JR. *
JUNCTION BLOCK



The ideal block for freezers and refrigerators. Made of thermosetting phenolic, NU-BLOK, JR. combines United's famous "short-proof" splice protection with standard receptacle for plugging in compressor cord, lighting circuit, fan lead, or any other cord. U/I approved for freezers, refrigerators, roasters, furnaces, etc.

Note how splices are anchored in isolated wells, affording maximum protection against short-circuits.

Also NU-BLOK junction block (larger, without receptacle) rubber and porcelain lampholders, automatic door switches.

*Trade Mark—Pat. Pending

WRITE for Bulletin ACN

United MFG. and SERVICE CO.
405 SO. SIXTH STREET
MILWAUKEE 4, WISCONSIN

How To Select Salesmen

Because there have been so many unprovable pros and cons tossed into the air concerning the use of scientific formulae in the selection of salesmen, practical judgment demands an airing of both sides of these equations.

If we were to try to define aptitude testing, it would resolve into something like this: an attempt to predict results based on known possibilities.

The use of presumably scientific methods of evaluating men is a relatively new thing in the business world. It has just emerged out of the embryonic stage, and therefore it cannot be fully appreciated nor fully damned just yet.

So far it would seem that its advantages far outweigh its handicaps—so long as it is employed judiciously and evaluated conscientiously.

However:

Whole-hog acceptance of the idea that a sheaf of tests and ratings and filled-out applications will do an infallible job of selecting men for jobs can only lead to disappointment and failure.

There are two factors to be considered in the adoption of any series of aptitude tests.

First, the job must be analyzed and rated—a standard of requirement must be established.

Next, the man must be tested in terms of the job.

And finally, the two ratings must be amalgamated and weighed.

Aptitude Testing

If a company intends to use "scientific" methods in its selection of salesmen, first of all it should take stock of those particular requirements which the business as a whole needs. These factors can be qualified.

To be specific: What is the line of responsibility? How much leadership is expected? What are the duties involved, and what human traits are required to fulfill them? Into what pay bracket does each job fall? What is its immediate promise and its future possibility?

Testing the all-too-human man against this all-too-fallible standard has been found, generally, to give reasonable clues to an applicant's suitability.

Corporations nowadays stipulate certain functional tests of intelligence, health, education, and personal history in forming their questionnaires.

In conjunction with these time-tried fundamentals, they may ask for specialized tests of social adaptability, sales and vocational interest, and personality-impact. Results of these tests can be interpreted in the light of job requirements.

If the tests are valid and reliable, and are administered under trained supervision, they will be helpful.

It has been the concern of a number of organizations in the past few years to develop tests that are valid. Such tests are based on many experiments.

Most of these touchstones rest on a psychological foundation that is well established, but which must rely for interpretation on the actual toe-to-toe experience of men in the selling field.

The best of these tests do not pretend to be a strict measurement of impersonal cases, but rather they aim to balance each individual's capabilities with every particular job specification.

Users of aptitude tests have claimed that their innovation has reduced sales training cost and, in

turn, minimized salesman turnover. They make the point that a man who is initially fitted for the job of selling takes less time to train—inasmuch as he already knows more selling fundamentals because of his interests and allied experience, and because he is more anxious to study for improvement.

Testing Can Go Wrong

Critics of the "scientific plan" have good arguments on their side, also. Their biggest complaint is that the indiscriminate use of aptitude tests leads to carelessness in personnel matters, and that it puts the whole business of hiring men for important jobs on a purely mechanical basis.

In the wrong hands—or in clumsy hands—such tests become a sort of wholesale branding. And, the critics claim, there are many special factors which are not taken into consideration.

Variations in standards of educational training in different parts of the country often produce misleading answers on personal history tests. Likewise, variations in regional wage scales can give false indications of a man's earning capacity and productive record. These factors lead to a general inaccuracy of aptitude tests, the "conners" believe.

Further, it has been pointed out that—even under proper supervision—when prospective salesmen take these tests indubitably they are attempting to achieve the best possible record.

Because they wish to make as good a rating as possible, men often may overrate themselves in their answers to personal questions. Then, when put on too big a job, they may fail.

The whole question of scientific selection of salesmen seems to depend on the development and standardization of good tests—plus a certain period of trial and error—and a willingness on the part of the tester not to trust his tests too much.

From Our Mailbag

Mr. Paul Reed:

Congratulations on either a splendid memory or a well preserved diary.

Obviously, I was very much interested in your article on page 24 of the Nov. 7 issue of AIR CONDITIONING & REFRIGERATION NEWS. The mythical Jack Cole might have spelled his name identically the same as yours, and looked remarkably like you. Furthermore, the correct name of the hardware company in Louisville was the Bomar-Somers Co., and the correct name of the Kelvinator distributor was the Ream-Thomas Co.

You referred to "Michigan nuts." If I remember correctly, that was because they were made by the Michigan Lubricator Co., which was the sole supplier at that time, and hence the name.

One thing I resent. You made no mention of the only scientific instrument you carried, which was the hydrometer in a case lined with purple velvet with which to test the specific gravity of the brine.

It has been a great life and it is must too late to weaken. With every best wish, I am

C. A. MILLER

Dear Carrol:

It was a pleasure indeed to receive your letter of Nov. 10. You can well imagine that your face was before me much of the time when I wrote the article "A Review—Thirty Years of Refrigeration Service," for you were the man who gave me my first information on refrigeration. I think I owe you a big debt of gratitude for that; for the refrigeration

industry has been kind to me and I only hope that I have been able to pass on to others some of the information that came my way and thus repay in some measure at least the kindnesses done me by you and others.

I see that you keep your memory bright and shining. Ream-Thomas was the name of the distributor which I changed over to Quire-Peters, and Bomar-Sommers Co. became Bomar-Winters Hardware Co. As you will recall, I actually worked for the gas and electric shop and as a matter of fact, I think that they were really the dealers although H. V. Bomar also controlled Bomar-Sommers Hardware Co. and The Electric Shop in the Starks building. Incidentally, do you know whatever became of Jack Slattery?

In order to make the article somewhat more readable, I did take some poetic license with some of the facts although essentially you will recognize that the over-all picture was about right. Electric refrigerators in those days would cost about \$1,000. I recall that you sold one to a man named Russell who had recently made a lot of money because oil was found on some of his property in southern Kentucky. The McCray box and the Kelvinator unit all installed, etc., came to a little over a thousand dollars.

But I am rambling. I think perhaps I could go on for hours. You will remember that you and I had a very pleasant visit in Evansville when we talked over old times. Incidentally, I had a nice visit with Frank Peltier recently in Philadelphia. Frank admitted to 35 years in refrigeration. You will remember that he started with old E. T. Williams and in fact, Frank is in the famous picture that has been published numerous times showing E. T. Williams explaining his household refrigerator to Thomas Edison and Frank is sort of in the background holding the crowd back.

Yes, I should have mentioned the hydrometer, for as you say, it was the instrument that we used for prestige purposes to amaze and mystify the customer. By the way, I still have my old Kelvinator flaring-block and flaring-punch for 1/4-in. and 1/2-in. tubing. It looks as if there is a good chance of the RSES Annual National Convention being held in Long Beach next year. Or if not, there is a probability that a Regional RSES-REMA jointly Sponsored Educational Exhibit and Conference, similar to the one held last year in San Francisco, will be held on the West Coast next year, so perhaps at that time, we can renew our reminiscences.

PAUL B. REED

All In a Day's Work

Down on Skid Row a bartender had just opened his doors to the public one morning when a pink elephant and a green kangaroo sauntered in and perched themselves on a couple of bar stools.

Glancing casually at his first guests of the day, the bartender yawned and said:

"You're a little early, fellas. He hasn't arrived yet."

Like Father, Like Son

"Oh, what a horrible day I've had!" groaned the young wife when her husband arrived home from the office.

"Junior cut his first tooth today, took his first step, and then he fell down and knocked out his only tooth," she sighed.

"Then what happened, honey?" he asked sympathetically.

"Then came the worst part!" she exclaimed, angrily. "He said his first word!"

Americana

The B. F. Goodrich Co. is distributing its "Wonder Book of Rubber," a cartoon book depicting some of the highlights of the rubber industry, nationally to teachers for their classroom use. Some of the oddly named locations from which these requests come follow:

Shakopee, Minnesota.
Bucatanua, Mississippi.
Blue Eye, Missouri.
Sizerock, Kentucky.
Evening Shade, Arkansas.
Mud Hollow, Wisconsin.
Greasy Creek, Tennessee.
Timvich, North Dakota.
Tall Gate, West Virginia.
Walnut Bottom, Pennsylvania.
Bird-In-Hand, Pennsylvania.
Thunder Hawk, South Dakota.
Pen yan, New York.
Loachopoka, Alabama.
Sun Dance, Wyoming.
Ho-Ho-Kus, New Jersey.
Tougausie, Kansas.
Klickithe, Washington.
Paul Smith, New York.
Kissimmee, Florida.
Broken Bow, Nebraska.
Onward, Indiana.
Loogootee, Indiana.
Steamboat Springs, Colorado.
Luck, Wisconsin.

Tag-End Story

This was contributed by a subscriber in Durham, N. C.:

Silas, a sailor on a tramp steamer got shore leave for the first time in many months. He headed for the nearest disorderly house as soon as he landed. Queenie, the madam, greeted him at the door.

"I'd like to meet," Silas instructed her, "a girl who has class. Someone with education. I read a lot, and I'd like to talk to a pleasant companion for awhile. Me, I like the finer things of life."

"I think I got just the type you're looking fer. You wait here and I'll go get 'er."

She was back in a few minutes, accompanied by a stunning young lady of exceptional poise and grace.

"This here's Esmerelda," explained Queenie proudly, "she graduated from Smith College!"

Silas was delighted with the girl's intelligence and wit. For several hours they discussed poetry, the arts, the economical situation, and various other subjects of intellectual merit.

"Look," quoth Silas. "You're a high-class type of girl, well-educated, and a descendant of a fine old family. How did you ever get into this sort of life?"

"Who, me?" naived Esmerelda, swinging her legs from the side of the bed, "Just lucky, I guess."

SPECIFY

DELAVAN

WHEN YOU NEED

PARTS FOR
COLDSPOT
COMPRESSORS

Save time and money
by ordering all parts
for Coldspot from
Delavan. Write for
Coldspot parts list.

DELAVAN
MANUFACTURING
COMPANY

3009 SIXTH AVENUE
DES MOINES 13, IOWA



Replace it right with Ranco

Ranco Inc.
COLUMBUS 1, OHIO



... and kept that way with
Ranco "All-Weather" Type O-1559 Controls

Completely automatic defrosting—regardless of weather, load conditions or cold location of the compressor—helps maintain uniform relative humidity with Ranco "All-Weather" Type O-1559 Controls. Adaptable to either natural or forced convection units in walk-in coolers, display cases, florist boxes and similar temperature range fixtures. They keep food and flowers fresher... provide better protection from shrinkage and spoilage.

Ask your Ranco wholesaler to show you the complete line of Ranco Controls—found in more original installations than any other control.

World's Largest Manufacturers of Refrigeration Controls... more than 20,000,000 controls now in use

Wiring Problem Solved To Install Ranges for Big Pillsbury Contest

NEW YORK CITY—What was probably the largest collection of electric ranges in operation in one place at one time was used by the 100 finalists in the Pillsbury Mills National Recipe Contest held recently in the Waldorf-Astoria hotel's grand ballroom here.

The ranges, supplied and installed by the General Electric Co., were awarded to the contestants who used them. The contestants, who came from 37 states, the District of Columbia, and Alaska, competed for prizes ranging from \$5,000 to \$50,000.

The \$50,000 grand prize was won by a Detroit woman who was baking with an electric range for the first time in her life. She stated that she intended to buy a house with part of her prize money and the electric range would be installed in her new kitchen.

The job of installing the 100 ranges in the ballroom proved to be a rather arduous task for the three engineers and 48 electricians and porters who undertook it.

They discovered that the ballroom was not supplied with sufficient electricity to operate the ranges all day and, in addition, the building was one of the few in the city that took only 208-volt circuits instead of the conventional 220 volts.

So the electricians had to run three extra service cables, change the ranges to take the 208-volt current, and, after the contest was over, reconvert the ranges to 220-volt service.

Though they were able to get the wiring into the ballroom in advance, they were forced to wait until the early hours of the morning of the contest to install the ranges.

Then they did an installation job that would normally take four days, in just six hours.

CABINETS: Allowing Enough Storage Near Appliances Stressed In Study

CHICAGO—To aid housewives in planning more efficient kitchens, the University of Illinois has conducted a study on the amount of cabinet space needed in modern kitchens. A grant by Hotpoint, Inc. made the research project possible.

Results are contained in a university circular and also in a bulletin developed by the appliance company as an aid to the curriculum of its regular planning schools for dealers.

Recommendations for ample and minimum space requirements for limited and liberal kitchen supplies were made. Storage was considered ample when supplies were stored without crowding and without stacking unlike items.

Ample space for storage of a liberal list of kitchen supplies can be provided by 7 ft., 9 in. of wall cabinets, and 13 ft., 6 in. of base cabinets, the study showed.

An additional 2 to 6 ft. of wall cabinets is needed for storage of dinnerware, depending upon whether the family requires service for 4, 6, 8, or 12 persons.

Liberal requirements of basic foods and equipment necessary to provide meals for an average urban family of four includes 156 packaged foods; 8 fresh, non-refrigerated foods, 114 utensils, and 12 cleaning supplies. The minimum list contains 100 packaged foods, 6 fresh, non-refrigerated foods, 84 utensils, and 9 cleaning supplies.

Foods, utensils, and supplies, used in the kitchen, were stored at the point of first use. Storage of an item in wall or base cabinet is determined on the basis of size, weight, breakability, shape, and use. Sufficient room should be left around items so that those stored behind the first row are easily reached.

The study recommended that cabinets be grouped around four func-

tional work centers: mixing center, cooking center, dishwashing center, and serving center. Each center includes the appliance, immediate work surface, and necessary storage cabinets.

Findings showed that, by combining the cooking and serving centers, and the mixing and dishwashing centers, the amount of necessary wall storage space was materially reduced.

Advised height of top shelves in cabinets should not exceed 72 in., a figure described as the maximum reach-grasp for a woman of average height. To provide maximum use, wall cabinets should be placed no higher than 15 in. above the appliance work surface. Wherever possible, liberal cabinet space should be planned.

When cost makes it necessary to use minimum space requirements as a temporary measure, enough wall space should be allocated for future development.

\$1,000 In Appliance Prizes Featured at Omaha Show

OMAHA, Neb.—Over \$1,000 in free appliances with a grand prize given every night, featured a four-day appliance show staged in December by Phillips Department Store in the South Omaha Eagle Hall.

Held from 7 p.m. to 10 p.m. nightly, with no purchase necessary to get tickets for the free prizes, the show attracted capacity crowds.

Berch Elected Head of Eastern Refrigerator Mfrs' Association

NEW YORK CITY—At the annual meeting of the Eastern Refrigerator Manufacturers' Association, Inc., held here recently the following officers were elected for 1950:

President, Barney Berch; vice president, Milton Schwartz; and secretary-treasurer, Julius Anolick. The new board of directors consists of Bernard Clark, Joseph Coloneso, Albert Davis, Charles Raffa, Abe Schreckinger, and Irving Rubinfeld.

Husband Steals Part of Wife's Refrigerator, Claiming She Won't Need One In Winter

ALBANY, N. Y.—An Albany man, who told police it was "too cold" for his wife to need an electric refrigerator, was directed in court to return the motor and compressor he took from their home.

Adelbert Overbaugh, 42, of 54 First St., pleaded guilty to a charge of petty larceny in Police Court and was paroled in his own custody by Justice Laffin to return the refrigerator parts before he is sentenced.

Overbaugh was arrested by Detectives Kaye Sorenson and Ephraim Patterson on the complaint of his wife, Vivian Overbaugh, 54 First St., who charged he removed the refrigerator parts, valued at \$75 from their home and failed to return them.

The arresting officers quoted Overbaugh as saying he "didn't think his wife would need the electric refrigerator during the winter because it was too cold to use one."

There's COMPELLING SALES APPEAL in this "Magic-Touch" Demonstration



Here's a "big step" in demonstrating and selling a new refrigerator!

Keep a few Inland "Magic Touch" Ice Cube Trays filled with cubes in your demonstrators.

At the right point in a sale, remove a tray . . . raise the "Magic Touch" lever and lift out the grid. That's all! Your prospect will see the whole trayful of big, sparkling ice cubes, free, separate, dry, ready for use!

It's a really compelling demonstration. There's nothing like this Inland tray for ease, speed and convenience . . . plus fast freezing and long service. To take full advantage of this sales appeal,

be sure that the automatic refrigerators you sell are fully equipped with Inland "Magic Touch" Ice Cube Trays that are pre-sold to your prospects by Inland's national magazine advertising.

**New refrigerators fully equipped
with Inland "Magic Touch" Ice Trays
give your customers
complete ice convenience**



"Magic Touch" Ice Trays

by **INLAND** MANUFACTURING



INLAND MANUFACTURING DIVISION
General Motors Corporation, Dayton, Ohio

In Order To Stir Interest In Store, Dealer Makes Auditorium Available for Club Use

MEMPHIS, Tenn. — The Home Equipment Co. recently held open house in its spacious new \$65,000 building at 2529 Summer. The company formerly was located at 287 S. Bellevue.

The company, with 15,000 customers on its records, prepared surprises and gifts for everyone attending the three-day opening. In addition, three major awards were given. The latter included a \$224.75 Model ML-77 Frigidaire refrigerator.

The new building is of buff brick, with a modernistic glass front for

full display of appliances. It includes a modern appliance showroom, offices, and auditorium, all air conditioned.

The building itself covers 6,000 sq. ft., with ample off-the-street parking. To the rear is a large warehouse, served by railroad siding, for handling of merchandise in carload lots. Also at the rear is a 1,000-sq. ft. service shop, completely equipped with facilities for servicing Frigidaire and other nationally-known products handled by the company.

George B. Bates, president of the company, pointed out that the auditorium will be available for sales meetings and for free use by clubs and other organizations as a convenient gathering place.

This room, which seats 80 persons in individual chairs, has a completely activated Youngstown kitchen and Frigidaire appliances for demonstration purposes. The room is both air conditioned and sound conditioned, and has a public address system and facilities for showing of films.

The new building is the company's third location during its five years of expansion. The company opened in August, 1944, in a building on Cleveland. Its rapid growth forced a move to larger quarters at 287 S. Bellevue within a couple of years.

Kalamazoo Sales & Service Is Chartered as West Va. Dealer

CHARLESTON, W. Va.—Kalamazoo Sales & Service, Inc., of this city, has obtained a charter from the Secretary of State to engage in a retail electrical appliance business here. Authorized capital stock is \$5,000. The incorporators were Earl Newcomer, K. M. Brock, and John F. Ellison, all of Charleston.

Available from
1/2 to 10 H.P.

**CLEANABLE
DOUBLE-TUBE
COUNTER-FLOW
WATER-COOLED
CONDENSERS**

Write for literature

Halstead & Mitchell
BESSEMER BLDG.
PITTSBURGH 22, PA.

**MOTOR-BASE
ADAPTERS**

To be sure, mount
that replacement
motor on a set of
motor adapters.
100 per cent uni-
versal.

1/2 to 1/2 hp.—101-D
1/2 to 3/4 hp.—102-C
1 to 3 hp.—103-C

SERVICEMEN—SEE YOUR JOBBER

Motor Adapter Corporation
4730 JOY ROAD
DETROIT 4, MICHIGAN

DEALERS - DISTRIBUTORS WANTED!

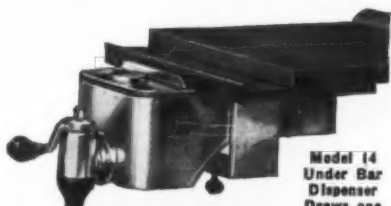
If you are prepared to handle sales, installation and service for our stainless steel soft drink dispensers for Bars and Taverns, advise business experience and some facts relative to your financial ability.

**INCREASES PROFITS FOR
BARS AND TAVERNS**

Exceptionally profitable to handle.—Write to

MULTIPLEX FAUCET CO. 4325 DUNCAN, Dept. ARN-14, ST. LOUIS, MO.

MANUFACTURERS OF SOFT DRINK DISPENSERS OVER 45 YEARS



Model 14
Under Bar
Dispenser
Draws one
sweet drink
and seltzer

Improved Power Supply Helps Nebraska Market For Air Conditioning

OMAHA, Neb.—Nebraska's kilowatt population has increased 90,000 the past year, and as a result the threat of rationing of power for air conditioning and electrical appliances is believed ended in the state. Crucial shortages have developed during the past three years during peak-load hours in summer and holiday periods.

Fay E. Smith, general manager of the Omaha Public Power District, and Ed Kelly, secretary of the board of managers of the Nebraska Public Power System, pointed out that OPPD is able now to produce 30,000 more kilowatts than a year ago, with present capacity of 166,000 kilowatts.

The NPPS Bellevue steam electric plant can produce a minimum of 60,000 kilowatts, and another 155,000 kilowatts can be produced by the Loup, Central Nebraska Public Power and Irrigation District of Hastings, and Platte Valley Public Power and Irrigation District of North Platte.

NPPS will have more power by the summer of 1951. Construction is to start soon on an addition to the Bellevue plant to turn out another 30,000 kilowatts.

Another construction project likewise is underway for another 44,000 by OPPD in Omaha.

The improved power supply situation is expected to spur large commercial type air conditioning installations.

3 Types of Service Contracts:

Air Conditioning Firm Suits
Agreement to Customer's Needs

PHILADELPHIA—The servicing of air conditioning systems can either be very profitable or the opposite, depending upon the methods used by the firm in setting up its contract system, according to John A. Connelly Co., local engineering firm.

This is so because no two air conditioning systems need the same identical attention.

"It is almost impossible for us to make an agreement with an owner of an air conditioning system on a standardized contract," says David L. Grasso, installation and maintenance manager of the Connelly firm, "because each system is so different."

"One may be older than the next, or it may involve some intricacies in its set-up, and so on. Because of this situation we have set up three contract forms for the servicing and maintenance of units that have proven very satisfactory."

Of the three forms, one is on the pay-per-service-call basis, the second is a yearly contract covering parts and labor, and the third is a yearly contract only covering labor with the customer having to supply the parts.

The first contract is the simplest. The owner calls the company for service and is then billed for time and materials. Usually these servicing calls are made on owners of home or office installations, for almost 90% of these customers prefer this method of servicing.

Whenever an air conditioning unit is installed in a home or office, the customer is educated as to the type of servicing that the unit must be

We hereby submit specifications and estimate for Air Conditioning System Service Contract at _____ in accordance with

the following schedule, which insures the proper and economical operation of your air conditioning system.

1. To furnish and install worn out and defective parts that are beyond repair, including labor.
2. To replenish the entire loss of Freon if necessary.
3. To furnish one start-up in May and one pump-down in October.
4. To furnish all emergency service without any additional charge between the hours of 8:00 A.M. and 4:30 P.M., from Monday to Friday inclusive.
5. For all service rendered Saturdays, Sundays, and after 4:30 P.M. weekdays, there will be a nominal charge of _____ per hour.

To further safeguard your equipment there will be a monthly inspection including the following:

1. Check and lubricate all moving parts.
2. Check operating pressures of condensing unit.
3. Inspect temperature and refrigerant controls.
4. Clean commutator on motors and motor housings.
5. Inspect and adjust safety controls.
6. Check and clean all electrical connections.
7. Check refrigerant in system.
8. Check for refrigerant leaks.
9. Inspect and adjust all valves.
10. Clean condensing unit.
11. Adjust tension on all belts.
12. Check filters.

This contract does not cover replacement of electrical conduit, wiring, or water drain lines, but does include their minor repairs; nor does it include the vacuum cleaning of the duct system or replacement of filters, water or steam pipes.

This contract also does not include cleaning of coils or repair or adjustments made necessary because of abuse, neglect, or lack of care on the part of the owner, his agent, or any person or persons having access to the equipment.

CONTRACT VALID FROM _____ TO _____

We hereby propose to furnish the above in accordance with this schedule for the sum of _____ Dollars (\$ _____).

Payments to be made as follows: _____

Any alteration or deviation from the schedule herein agreed upon involving extra cost of labor and material will only be executed upon written orders for same, and will become an extra charge over the sum mentioned in this contract. Agreements made with mechanics not recognized.

Date _____ Signed _____

ACCEPTANCE OF CONTRACT

The foregoing schedule, terms and specifications are satisfactory, and the same are hereby accepted and agreed upon, and _____ hereby authorize you to execute the same.

Date _____ Signed _____

This is the yearly contract form covering parts and labor.

given. They are told that every season every air conditioning unit must be given a "starter" and at the end of the season they must be "closed-down." Once these two operations are entrenched in a customer's mind, the company can expect to be called to that customer for these two checking periods.

"Every new customer of air conditioning, particularly home owners who just buy the window package units, think that all they have to do is turn it on and off with the season," Grasso observed. "It is up to us to point out that the unit will not give them proper service unless it is 'started and closed' each season."

All units are guaranteed by the company for a full year. Near the close of the year, customers are informed that their guaranty is expiring and that they will have to call the company for further servicing. Customers are advised that just as their autos require summer and winter change-overs to give good operational service, so do air conditioning units.

After a guaranty expires, service and maintenance on that system is almost invariably carried on by this concern. That is because the serviceman always plays up proper maintenance of the equipment when called out to the job, and a sizeable sticker with the company's name is placed in a conspicuous place on the unit.

For the heavier tonnages in air conditioning equipment, the company has the other two contract forms. One is for labor coverage and parts and the second just covers labor.

Before any contract is signed with a customer, a thorough check is made on the unit in question. Then the company tells the customer which contract would be most beneficial.

If the unit should be fairly worn and look as if it will need parts shortly, the company will only offer a labor contract because it would be very risky for itself to sign the other. If, however, the latter contract is the one that the customer insists on, then the difference must be made up in the pricing.

"In the servicing and maintenance field, the only way it can be made profitable is to do a volume business," said Grasso. "And even in a volume business it can be a loss if the company will not protect itself against the costly losses that some equipment can cause."

It was explained that at the end of every fiscal year, all servicing contracts are checked to see if they are producing profits or losses. The pay-per-service-call contract is usually a profitable one, but the other two vary. Some contracts result in losses because of the number of calls made by servicemen and also some equipment may break down so often as to make parts a costly proposition.

Approximately 30% of all these contracts are losses, but because of the number of contracts, the servicing and maintenance department shows a profit. That is the reason why volume is so necessary to make this phase of the air conditioning business profitable.

"Servicing is not only made by us for the profit involved but because it is almost an absolute necessity in order to sell air conditioning units," Grasso pointed out. "When customers are told that we will service their units for the guarantee period and then they can expect us to give them service beyond that period, a sale can more readily be made."

The majority of Connelly's servicing and maintenance contracts are

signed with customers who have purchased the systems from the company. Although the company does some aggressive advertising for this type of work, such as direct mail to owners of systems, newspaper advertising, several insertions in the phone book under different listings, and truck signs, they prefer to stick to the systems that they have installed.

They know the "ins and outs" of these systems and can make proper contracts that are satisfactory to both the owners and themselves. A check of the existing contracts has shown that the losses occurring from costly labor or parts change-overs usually come from the servicing of equipment other than that installed by themselves.

Servicing Other Makes of Equipment Furnishes Leads

But it would not be business-like to service only their equipment exclusively, because by servicing others, it affords them an opportunity of getting leads for air conditioning sales.

Every time a contract is signed, Grasso makes up two duplicate 3 by 5-in. cards for his files. The original contract is placed alphabetically in a folder and filed, while the two cards are filed by street address and name. In this way he has a cross reference file to all service customers.

If a customer should call for service, the card is immediately looked up in the alphabetical file and a record made on a dispatch sheet. Each call is recorded on this card and the dispatch sheet lists all the servicemen on duty. Then the call is placed under a particular serviceman's name so that they are all scheduled evenly.

Sometimes Grasso may get a call for service but fail to find the caller's name in his alphabetical file. This may result if a customer has a store and the store is sold to someone else. Then the new owner is not known to the service department. In this case, the street address file is referred to and the serviceman knows where to go.

"Many storekeepers who have air conditioning units either forget or don't call us to let us know that someone else has taken over the business," Grasso commented. "Then, when the new owner phones us for service, we are at a loss to place him. But by looking up the street address, we can very easily identify the place and the system."

If any owner should sell his unit, he is entitled to a pro-rata refund of his unused contract period. Then the new owner is contacted for the service contract. It is usually the policy of the new owner to follow the policy of the former one.

All contracted systems are checked regularly to see that they are in operating condition. The price is set up on a plan of charging so much per ton. But this is flexible, for the price is higher if the system is older and lower if it is in better condition.

BRUNNER
SINCE 1906

REFRIGERATION helps you serve better

Cast a Critical Eye on these Compressor parts!



The true usefulness of any refrigeration equipment stems from the operating efficiency of the compressor. The parts are few...assembly is relatively simple. It's what you can't see that is so vitally important in measuring the worth of your investment...proven engineering, durability of metals and the watch-like precision of manufacture.

Before final selection of refrigeration equipment, it will be well worth your time to talk with a Brunner* representative. Ask for evidence of BTU capacities. Compare operating speeds. Get the facts on service life, dependability, operating economy. Know every reason why more and more buyers specify Brunner Refrigeration Condensing Units.

BRUNNER MANUFACTURING CO.
Utica 1, New York, U. S. A.

*Equipment manufacturers, installation contractors, service companies, can profit thru identification with Brunner. Have the advantages of a complete, customer-accepted line. A Brunner factory representative will call on request and without obligation.

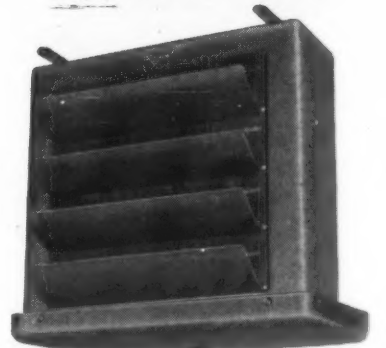
**REFRIGERATION
CONDENSING UNITS**
...a size and type
for every purpose

BRUNNER
SINCE 1906

AIR AND WATER COOLED MODELS
1/4 HP. TO 30 HP.

LOOK to LARKIN

for Good Looks



LARKIN HUMI-TEMP UNIT

For clean, smart lines, satin-smooth finish, color and overall good looks—Larkin leads. Behind this beauty is the quality and performance that keeps Larkin ahead.

Manufacturers of the original Cross-Fin Coil — Humi-Temp Units — Evaporative and Air Cooled Condensers — Air Conditioning Units and Coils — Direct Expansion Water Coolers — Steel Vacuum Plate Coils — Heat Exchangers.

WATCHDOG OF THE NATION'S FOOD SUPPLY

LARKIN COILS

519 MEMORIAL DR., S.E. • ATLANTA, GA.

Formula Urged To Take 'Guesswork' Out of Estimating

ATLANTIC CITY, N. J.—As a starting point to expanding its services to members, the Refrigeration and Air Conditioning Contractors Association is proposing to develop a standard estimating formula and printed form designed to furnish members with a tangible basis for estimating the costs of each job.

This proposed project was brought to light at the organization's fourth annual convention held here during the All-Industry Exposition in a talk before the association by R. M. Swisher, Chicago business consultant.

Swisher said that the formula will help members to "take some of the guesswork out of (their) estimated cost."

Grade 'A' Milk Drive Aids Cooling Equipment Market

OMAHA, Neb.—Grade A milk which first came on the Omaha market a year ago last October, now accounts for 18% of the milk sold in the Omaha area, it is reported by Dr. Edwin Lyman, city-county health director.

A growing demand for mechanical milk-cooling equipment is foreseen because of an agreement by dairies and the Iowa-Nebraska Milk Producers Association that if 50% of the milk is grade A by April 1, a 50 cents per 100 lbs. premium will be continued to the end of 1950. Otherwise the premium drops back to 35 cents.

Another deadline will be set to make the entire market grade A, if the 50% grade A goal is reached by April 1, Dr. Lyman stated.

Trane Catalog Covers Train Heating, Cooling Equipment

LA CROSSE, Wis.—A new, illustrated catalog covering the first and only completely integrated line of railroad heating and air conditioning equipment in the industry is being distributed by the Trane Co. here.

The catalog introduces the Trane compact air conditioning unit, Trane railway custom-air, which controls humidity and temperature; the unique Trane combination condenser, and non-ferrous finned radiation with a steam distributing tube, all new to railroad heating and air conditioning. In addition to new products, the catalog shows products of the regular Trane line which have been adapted to railroad applications.

Copies of the catalog, Bulletin DS-258, are available from the Trane Co.

Modesto Refrigerating Co. Names Advertising Agency

SAN FRANCISCO—Appointment of John O'Rourke & Associates, local advertising agency, to direct the advertising of the Modesto Refrigerating Co. was announced recently by John B. Beard, general manager.

Modesto maintains quick-freezing, cold-storage, processing, and shipping facilities for growers and ranchers in the Modesto area. Trade magazines and direct mail promotion will be the principal media used in the program.

Bush Announces Dividend

WEST HARTFORD, Conn.—The Bush Mfg. Co. here has announced a dividend of 28% cents per share on the 4½% cumulative convertible prior preferred stock and a dividend of 31¼ cents per share on the 5% non-cumulative preferred stock.

"This," he added, "can only result in more profits for each member of the association and will provide a common understanding among all the members as to what constitutes a reasonable cost of a given job."

"Your directors," he continued, "also have under consideration the development of industry information in such a manner that each member can compare his own operations with others in the industry whose operations are similar."

"Other activities, such as workmen's job classifications, information as to building codes, relationship with manufacturers with respect to warranty terms and materials, standardization of conditional sales and maintenance contracts with respect to methods of invoicing, guarantees, etc., the development of uniform accounting procedures, and a number of other activities, all of which are designed to be helpful to each member of the trade association."

Swisher devoted the main body of his talk to the things a good trade association will do for its industry and the responsibilities of the members to the association and to each other.

The portion of his talk relating to the role of a good trade association follows:

"In order for the industry trade association to discharge its responsibilities it must engage in a number of constructive activities in the role of a leader, in the role of a voice, in the role of an educator, in the role of a coordinator, and at times in the role of an absolute supervisor of the industry."

"A good industry trade association will consistently and perpetually advocate the use of good business methods on the part of the members of the industry. It will help its members to develop its logical markets and it will assist the members to earn a reasonable profit in performing its services."

"It will help its members to know what their operating costs are and it will help its members to avoid cheapening its product because of a lack of understanding of its operating costs."

"It will help its members to earn a reasonable profit because of better business information, and it will help it to do so without violating Governmental regulations governing pricing policies, which are intended to provide a fair price for the product to the industry's users."

"A good association will encourage the members of an industry to be aggressive businessmen on their own behalf and on behalf of the industry itself."

"It will encourage its members to be prudent businessmen in that it will encourage them to earn a reasonable profit consistent with services rendered in such a manner that the individual members may enjoy not only a good living for themselves, but may be able to prepare the way

for their own financial security."

"A good trade association must furnish business statistics to its members which they can use in their own operations."

"This must be done by the dissemination of economic statistics affecting the health of the industry, and it must supply the members of the industry with operating information as to costs, labor rates, and as to ordinary operating expenses in such a manner that each member of the industry may be able to compare his own business with others in the same industry so that he can constantly be able to improve his own operating conditions, not only in the interest of a satisfactory profit to himself but in the interest of serving his customers better and more economically."

Millar & Son Distributes Westinghouse In Utica

UTICA, N. Y.—Charles Millar & Son Co. has been appointed a distributor of Westinghouse electric home appliances, it was announced by William H. Loeber, eastern district manager of the Westinghouse Electric Corp.'s appliance division.

In addition to its Utica office, the distributing organization has branches in Binghamton, N. Y., Springfield, Mass., and St. Johnsbury, Vt.

The Utica firm will handle distribution to retail dealers of Westinghouse water heaters, electric garbage disposers, and water coolers.

"A good industry trade association will encourage its individual members to be good managers of their businesses."

"It will teach them and remind them of the importance of observing good credit relations with both customers and suppliers, to maintain reasonable inventories, to purchase and use good equipment which contributes to economical operations, to be thrifty in his business habits, and to manage his business in such a manner that a good financial condition is prevalent at all times."

"It will encourage the members to manage their business in such a manner that their working capital is sufficient for current and future needs. In periods of changing economic conditions, when the problem of individual business management is most acute, the industry trade association will do everything in its power to enable each member of the industry to survive such economic disturbances."

"A good industry trade association is headed by a paid executive whose responsibility is first to be the best informed person in the industry as to conditions, practices, and public relations, and who is constantly disseminating his knowledge, experience and advice to the various members of the industry."

"A good industry trade association will cooperate closely with the various local groups within the industry."

"For example, a good national industry trade association will do everything in its power to cooperate with state and local groups or as-

sociations in the same industry in an unselfish, unprejudiced manner in the interest of all members of the association."

"It must be recognized that certain industry problems, such as local ordinances, codes, labor relations, and economic conditions, must be considered at the local level, and it becomes the responsibility of the national industry trade association to serve as a clearing house for practices, methods, and negotiations, whereby the problems of one local group may be better solved because of the experience of other local groups."

'Tried and True' Contests Are Least Likely To Flop, Advertisers Told

NEW YORK CITY—Most promotional contests that have tried to be "different" have turned out to be flops from the advertiser's point of view, F. Harvey Morse, account executive of the Reuben H. Donnelly Corp. told members of the American Marketing Association recently.

He advised that to be successful, they stick to the tried and true types, such as slogans, 25-words-or-less statements, or why-I-like—essays.

It is also risky to use amateur judges for a contest, he warned, because they may award prizes for plagiarized material. Another pitfall to the advertiser is drawing up rules that might be in conflict with postal regulations.

No Matter How You Look at it...

"IT'S A NATURAL" for Sales and Profits!

The New 777 Series Brings You:

- Simple, compact, and rugged construction.
- Large wrench flats—for standard wrenches.
- Cartridge needle and seat assembly simplifies cleaning and inspection.
- Accessible superheat adjustment.
- Stainless steel and brass throughout.
- Anchored Capillary for strength.
- Polished Flare Faces.
- Ball-Type Needle gives desirable flow characteristics.
- Interchangeable Inlets ¼ and ⅜ SAE.

DETROIT

LUBRICATOR COMPANY

5900 TRUMBULL AVE., DETROIT 8, MICHIGAN
Division of AMERICAN RADIATOR & Standard Sanitary Corporation
Canadian Representatives: RAILWAY & ENGINEERING SPECIALTIES, LTD.—Montreal, Toronto, Winnipeg



DETROIT HEATING AND REFRIGERATION CONTROLS • ENGINE SAFETY CONTROLS • FLOAT VALVES AND OIL BURNER EQUIPMENT • DETROIT EXPANSION VALVES AND REFRIGERATION ACCESSORIES • STATIONARY AND LOCOMOTIVE LUBRICATORS

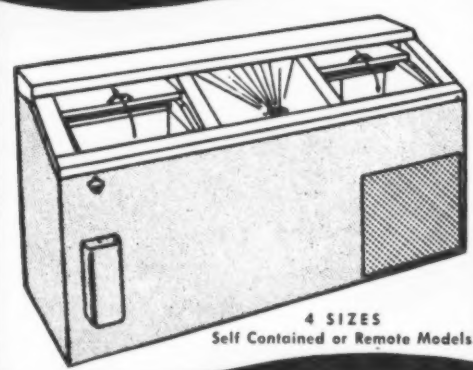
Serving home and industry • AMERICAN STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE ROLLERS • KOLB HEATER • TONAWANDA IRON

NATIONAL DRY BEVERAGE COOLERS

Nationally famous NATIONAL CHAMPIONS incorporate all the fine features you look for in a cooler. Be rational... buy National!



NATIONAL COOLER CORPORATION • 1600 Woodland Ave. • Cleveland 15, Ohio



4 SIZES
Self Contained or Remote Models

Write for 1949 Catalog

They'll Do It Every Time By Jimmy Hatlo

WHY IS IT? WHEN SOME POOR SLOB WANTS TO CHANGE HIS JOB... HE'S SELFISH! MEAN! AND YELLOW!

WHAT? QUIT HERE FOR A JOB WITH AJAX? DO YOU CALL THIS LOYALTY? DON'T YOU OWE SOMETHING TO THE FIRM THAT PRACTICALLY RAISED YOU FROM A PUP? DON'T BE A DESERTER, RUTLEY... GO BACK TO YOUR DESK AND FORGET IT!



BUT THE BOSS RESIGNED... WAS WINED AND DINED... AND HE'S A JOLLY GOOD FELLOW!

YES--AJAX'S GAIN IS OUR LOSS! HERE'S TO GOOD OL' BULLCARP! ALL WOOL AND A YARD WIDE! "YOU MAY BELONG TO THE COMPETISH--BUT YOU ARE STILL OUR FAVORITE DISH." BLESS YOU, PAL! SUCCESS! WE LOVE YOU!



Do You Have 'One Foot In the Door'?



MORE CAPACITY—The capacity of an evaporator drops rather sharply when it is used at low temperature levels because of heavy frosting. The THERMOBANK evaporator is rated under actual low temperature operating conditions, guaranteeing full rated capacity on the job.

THERMOBANK SAVES MONEY!

NO EXTRA MAINTENANCE—THERMOBANK defrosts itself. Since the THERMOBANK is so infallibly automatic, eliminating electric heaters, brine and water sprays, it does away with extra maintenance labor.

THERMOBANK SAVES MONEY!

LESS OPERATING TIME—An ice-free evaporator gives more compressor capacity. This cuts sharply the operating time of the system and frequently permits the use of a smaller size compressor.

THERMOBANK SAVES MONEY!

NO SPOILAGE LOSS—Radical temperature changes in low temperature rooms cause serious dehydration. In the THERMOBANK the freezer temperature is practically constant. This eliminates deterioration and weight losses.

THERMOBANK SAVES MONEY!

Send for Catalog 16R-A

THERMOBANK

----- THE STANDARD OF THE INDUSTRY!

KRAMER TRENTON CO. Trenton 5, N. J.

THERMOBANK - COOLMASTER - RADIAL UNITS - PANEL UNITS - CUBERS - FINNED COILS - BARE TUBE COILS - HEAT INTERCHANGERS - CONDENSERS Air Cooled, Water Cooled, Evaporative - WATER COOLING EVAPORATORS - BLAST COOLING COILS - BLAST HEATING COILS.

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

Trade Mark registered
U. S. Patent Office
Est. 1926



Copyright 1949,
Business News Publishing Co.

F. M. COCKRELL, Founder

Published Every Monday by BUSINESS NEWS PUBLISHING CO.
450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924.

Subscription Rates: U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: \$5.00 per year; 2 years \$8.00. All other foreign countries: \$7.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Please send remittance with order.

GEORGE F. TAUBENECK
Editor and Publisher

PHIL B. REDEKER, Editorial Director

C. DALE MERICLE, Associate Editor

JOHN SWEET, Assistant Editor

HUGH MAHAR, Assistant Editor

GEORGE HANNING, Assistant Editor

ROY DENIAL, Assistant Editor

Editorial Assistants: MARGARET DEAN,

MARGARET POMMERENING, LOUISE

GINET, AND LOERRAINE MAJOR

E. L. HENDERSON, Business Manager

ROBERT M. PRICE, Adv. Representative

ALLEN SCHILDHAMMER, Adv. Rep.

ALLEN S. RUSSELL, Adv. Rep.

BETTY JANE TULLOCH, Adv. Secy.

WALTER J. SCHULER, Production Mgr.

JOHN F. JOLIAT, Circulation Manager

Member, Audit Bureau of Circulations. Member, Associated Business Papers.

VOLUME 58, No. 17, SERIAL No. 1,084, DECEMBER 26, 1949

If You Believe In Natural Rhythms, You'll Be Happy About This

OUR United States of America may be moving into the greatest years of its great history, according to the Foundation for the Study of Cycles.

That's the conclusion reached in a 1950 Postscript to a volume published in 1947, "Cycles—the Science of Prediction," authored by Dewey and Dakin. That book created quite a stir, and was reviewed extensively in the "Inside Dope" column of AIR CONDITIONING & REFRIGERATION NEWS.

Developments since that memorable book was issued by Edward R. Dewey, director of the foundation, and his associate, Edwin F. Dakin, have borne out their warning that the U. S. economy would face a few bumps in the ensuing years.

A brand new 52-page postscript to the same volume, however, points out that the same rhythmic cycles of major business activity which forecast those "bumps" also indicate a tremendous expansion in the 1950's "on a scale that should make for magnificent recovery; and opportunities opening up on a scale unfamiliar in any recent times."

Considering all known probabilities, the Researchers of Rhythms predict that our country is "very near a time of vast new progress and world reconstruction on a scale quite new to recent American experience. Barring war's cataclysm, those young Americans beginning careers today should find opportunities never even glimpsed by those in the '20's and '30's who called themselves the 'lost' generation. We may well be moving into our nation's greatest years."

The chiefs of the Foundation for the Study of Cycles declare that recent discoveries regarding a six-year rhythm in the economy tend to confirm other rhythmic indications noted in their earlier studies. These other major rhythms occur regularly in 54, 18, 9, and 3½-year cycles.

The present period of economic readjustment, the authors observe, offers businessmen in the United States a great opportunity to forge ahead—far ahead.

"It could even be our last opportunity," they continue, "to decide whether we want to run a sound profit-economy in America—and who would say 'No' after looking at the rest of the world?—or whether we are going to move the rest of the way into state ownership and control of production and distribution.

"If our choice is to be the way of freedom and abundance, then we have a very large overhauling job to do in a system which takes well over 25% of the national income in taxes; which still gives us no feeling of economic security; which has managed to make our industry so unattractive to investors that government bonds, even in prosperous times, are more desired than stocks."

It's the belief of the students of business cycles, however, that the right choice will be made. From their study of history they can't figure how the United States of America will fail to make the right decisions so as to enjoy the greatest business boom of all time.

The expanded edition of "Cycles—the Science of Prediction," is published by Henry Holt & Co. Its price is \$3.50, and it's a fascinating volume.

Military Designs

Pre-Fab Warehouses, Mobile Refrigerators Are Among Flexible Adaptations That Any New Conflict Might Require

CHICAGO—In the event of another war, what will be the refrigeration requirements of our armed forces?

Some possible answers to that question—at least the current thinking on the subject—were brought to light when Sterling Smith discussed "Some Military Aspects of Portable Refrigeration Equipment" before the forty-fifth annual meeting of the American Society of Refrigerating Engineers at the Edgewater Beach hotel here.

Lightweight, simplified, rugged design adaptable for Arctic or desert warfare are the major characteristics that will be sought, indicated Smith.

But whether all requirements can be determined in advance is quite dubious, he admitted, because what will be needed in terms of refrigeration as well as most other supplies will be dependent on the type of warfare.

Here, however, is something of a dilemma:

"In the future it's doubtful that any nation will have much time to prepare for war, perhaps only a matter of hours," Smith predicted.

From Arctic to Africa

"During peacetime, too, our thinking is in terms of permanent, peacetime installations, instead of wartime conditions. In the last war, for example, there were the fluid fronts in the Pacific, in Europe, and in Africa. Future wars point to fighting in the Arctic at -60° F. and in Africa.

"In the main, both insulated enclosures and machines left much to be desired in the last war, and in general the Quartermaster is now planning a complete revision in refrigerating equipment as well as changes in rationing."

These plans, he said, call for the following:

Lightweight, rugged, dependable equipment.

Few designs, requiring no special machines for production.

Standardization and designs permitting the greatest variety of application with a minimum of components.

Plug-in units that can readily be replaced and returned to rear echelons for repair.

Simplified and standardized designs to facilitate servicing.

Lightweight components.

"Development of refrigeration equipment for the armed forces must be made around basic items that singly or in combination can meet all requirements," stressed Smith.

"Refrigeration equipment must be extremely rugged; basically simple in design and operation, and extremely serviceable. It must be of minimum weight for air transport, and must permit assembly by men without special tools.

Weight Most Important

"Generally," Smith pointed out, "industry is not particularly interested in weight, but is more concerned with costs. Costs, however, are not paramount in designing equipment for the armed forces whereas weight is of great importance.

"Changes in logistical plans have already outmoded most of the refrigeration used in World War II. In the next war the armed forces will want greater portability and ruggedness in their refrigeration equipment that will be adaptable for a wide range of applications.

"Let's take a look at a single phase of the problem and draw a comparison: In commercial operations, the products move from the processing plant to a cold storage warehouse or some such storage facility and from there through the channels of distribution to the ultimate consumer.

"On the military side of the picture, the perishable product moves from the processing plant through the transport system to the rear base area for storage and distribution to the ultimate consumer, who in this case is the combat soldier. He has to be fed at the combat level, in the forward areas, the mobile supporting areas, and the rear bases.

"The tremendous change in the logistical concept of refrigeration in

the field has outmoded most of the World War II equipment," declared Smith. "The changes in logistical concept have been brought about by changes in rationing plans, to provide better rations for the troops in the field. This calls for equipment to operate over wider ranges of temperatures with greater portability and ruggedness: Ruggedness almost to the extent of being indestructible.

"We all know that the idea of fixed permanent construction for refrigeration at the rear bases proved highly impractical during World War II. The mobility was lacking. The tempo of warfare was too swift. We know of the huge refrigerated barges which were built as floating warehouses in an attempt to solve the problem.

"Let's go back to the warehouse. This must be so designed as to present easy erection and tear-down. When the war moves on, the warehouse can move along with the war.

"Warehouses of the future will be portable, produced in modular form. A lightweight panel with the basic dimensions of 4 x 8 and 4 x 12. This panel will probably be metal shod and insulated with a chemical insulation. There are many of these insulations, as you know, and new ones are being developed in cooperation with the military.

"Since the panel is the basic unit of the portable warehouse, let us examine the features of the ideal panel.

"This will be substantially all metal of a design which will lend itself to high-speed production. A design which will produce a lightweight flyable structure suited for airborne operations.

"There will be no 'handholes'—no rods to fish into place. Also all loose screws and fastening devices are eliminated.

Adaptable to Any Metal

"The design should be flexible enough to lend itself to a quick shift from one type of metal to another. For instance, if steel sheets become critical—shift to aluminum," he explained.

"Insulation might basically be of the honeycomb type for added structural strength. The honeycomb would be filled with one of the highly efficient chemical insulations.

"Outer sheets or skin surfaces would be used in a stressed condition. This helps carry the load and cuts down the mass of the structural members.

"The finished panel would be light, strong, of simple design, permit a choice of metals, and choice of insulations. The new insulations and elimination of framing would permit the use of smaller capacity refrigerating machines.

"The panel would produce a warehouse completely portable with 100% salvage value.

"The mechanical equipment will be a 'plug-in' unit to provide a comparative range of 0° to 35°. The capacity will be approximately 1 ton operating in a 125° ambient. The weight will be under 600 lbs.

Unit Could Be Pulled by Truck or Carried in Plane

"Now we have our warehouse. The perishable ration will move out of the warehouse in a mobile refrigerator of lightweight construction, having retractable wheels so it may be re-loaded in a cargo plane or several of them may be carried on a truck. There probably will be two of these units, 150 cu. ft. for the supply of the semi-permanent camps and a smaller one for the forward areas.

"These will be provided with a gasoline engine driven 'plug-in' unit for use where no electric supply is available. The areas where motor generator sets are available, electric drive would be used. In the smaller unit, the frozen products would probably furnish their own refrigeration.

"We have here reviewed only a small part of the total problem. That part which you can readily visualize as of tremendous importance in the planning of equipment—the portable equipment necessary to meet the requirements of the modern concept of war. The pre-fabricated warehouse and the lightweight refrigerators which will move the perishables 'down the line.' These are the porta-

ble and mobile units of equipment necessary to make sure that our army continues to be the best fed in the world," said Smith.

Admitting that "during peace-time the military is inclined to think in negative terms," Smith asserted that "industry is not only negative but may actually be antagonistic" toward development of equipment for war-time use.

He pleaded for more cooperation along these lines.

Commenting on the talk, J. R. Caulk, Jr. of Hussmann questioned whether "the author isn't describing equipment designed for the last war" rather than that which will be employed in the next war.

"At the start of World War II we had the right equipment, but it was for the wrong war. Now we must see the tactics and strategy of the next war before we can design and produce equipment for it. Bacterial warfare, for example, could change all our concepts," Caulk suggested.

"Division of responsibility on the part of the military in procuring equipment is a big problem that should be ironed out," commented L. H. Schoenthal of General Refrigeration, who had served as a major in the Signal Corps in World War II. He also cited the problems created by the armed forces changing the nomenclature and part numbers of the equipment they used.

ASRE Committee Tackles Heat Pump



Faced with such projects as setting up standards of rating and nomenclature for heat pumps, this technical committee headed by C. G. Coogan, chairman, convened during the recent ASRE convention in Chicago. In earnest discussion here are (l. to r.) Geo. W. Meek, W. F. Friend, R. C. Jordan, Coogan, G. B. Priester, R. V. Berry, and E. C. Gyax.

H. B. Bryans Re-Elected Head Of Philadelphia Electrical Group

PHILADELPHIA—Henry B. Bryans, president of the Philadelphia Electric Co., was re-elected president of the Electrical Association of Philadelphia for the fifth consecutive term, at the annual meeting of the group's board of governors.

Other officers re-elected to serve during the coming year are: E. W. Loomis, district manager, Westinghouse Electric Corp., vice president; Philip H. Ward, Jr., president of the Ward Electric Co., treasurer; and Robert J. Moran, of the Middle Department Rating Association, secretary.

Buffalo Forge Holds Fan Study

BUFFALO—A five-day symposium of fans and air conditioning, arranged by the Buffalo Forge Co., was held in Hotel Statler here, attended by 30 engineers from many of the country's leading industrial firms.

Each session consisted of lectures and open discussion on theories and problems in this field. The visitors toured the company's plant during the conference.

Withers Joins Kingsway, Canada

VANCOUVER, B. C., Can.—Frank Withers who was formerly with Hall & Nunn has now joined the staff of the Kingsway Refrigeration Co.



Recognized Sign of
DEPENDABILITY
on any Refrigeration Valve



DEPENDABILITY is today one of the industry's most rigid "standards of perfection" in refrigerant control performance. To men who sell, install and use A-P Refrigeration Valves, this is a fact long-proved to your own satisfaction and profit. You may rely on this as the future brings new progress in A-P valve-design and application.

AUTOMATIC PRODUCTS COMPANY

2450 NORTH THIRTY-SECOND STREET • MILWAUKEE 10, WISCONSIN
Export Department, 13 E. 40th St., New York 16, N. Y.



DEPENDABLE Refrigeration Valves

STOCKED AND SOLD BY GOOD REFRIGERATION WHOLESALERS EVERYWHERE...
RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

What's New

Frigidaire Adds Cabinet To Sell Frozen Juices



DAYTON—Two new self-service "Frozen Juice Centers," designed to stimulate the fast growing frozen concentrate business have been developed by Frigidaire Div. of General Motors.

The new frozen juice cabinets are of self-service open-type to spur customer impulse buying. One model has 5.3 cu. ft. of storage capacity and the other has 8.2 cu. ft.

The new models are constructed of Bonderite-treated steel and are finished with two coats of white baked enamel. The storage compartment has zinc-coated walls and bottom.

The top is a one-piece sheet of stainless steel, swept-down over the front and back of the cabinet. It is secured by screws at either end of the cabinet, eliminating all dirt-catching cracks and crevices. Emblazoned across the front of the cabinet is a "Frozen Juice Center" decal.

A radically new condenser located underneath the cabinet extends the full length of the storage compartment while the sealed, rotary Meter-Miser compressor and controls are housed in a small machine compartment in one end. This new arrangement permits more storage without greatly increasing exterior cabinet dimensions.

The larger model, with a storage capacity of 8.2 cu. ft. will hold between 725 and 775 6-oz. frozen juice cans. This same cabinet will hold about 185 to 200 qts. or 350 to 375 pints of ice cream and about 287 lbs. of frozen food.

The 5.2-cu. ft. capacity cabinet will hold 450 to 457 6-oz. juice cans;

115 to 130 qts. or 225 to 240 pints of ice cream, and about 185 lbs. of frozen food.

Both models are equipped with a superstructure display or merchandiser containing illuminated colored pictures. The larger cabinet merchandiser has four-illustrations while the 5.2-cu. ft. cabinet has three.

Both cabinets are equipped with a night cover and two dividers. Casters are available as accessory equipment. Dimensions of the 8.2-cu. ft. cabinet are 54 1/4 in. long, 32 3/4 in. high, and 30 1/2 in. wide. The superstructure extends 23 1/2 in. above the cabinet top.

The smaller model is 42 1/4 in. long with the same height, width, and corresponding superstructure dimensions.

Aerovap Vaporizer Controls Flying Insects Indoors



NEW YORK CITY—"Automatic and continuous" control of small flying insects in enclosed premises is afforded by a thermostatically-controlled electric-vaporizer unit called "Aerovap," according to American Aerovap, Inc., which is located here.

The plug-in unit consists of a heater encased in black bakelite, attached to the end of a wall bracket, and contains a cup of insecticide. When the current is turned on, the insecticide is volatilized, and microscopic particles are dispersed. Houseflies, mosquitoes, gnats, and flying moths are said to be killed on contact with the particles in the air or on wall and ceiling surfaces.

The Aerovap system is described as harmless to humans, animals, and foodstuffs, and is odorless, stainless, and noiseless. It is recommended for use in food stores, kitchens, restaurants, and residences.



Cory Portable Dishwasher Operates from Drainboard

CHICAGO—A new portable electric dishwasher, which retails at \$89.95 and weighs 25 lbs., has been introduced recently by the Cory Corp. here under the trade name "Matic Maid."

The new dishwasher is said to operate on the drainboard of any ordinary size kitchen sink and requires no installation.

It was developed by Applied Products Co. of Los Angeles.

It uses principles of hydraulic engineering. Its electric motor propels a "unique" centrifugal pump which sprays two constantly rotating streams of hot water at different angles across pre-positioned dishes, glasses, and silverware.

Dishes and glasses are stacked in new patented stainless steel wire racks. Knives, forks, and spoons are hung in brackets so as to be individually exposed to the complete washing operation.

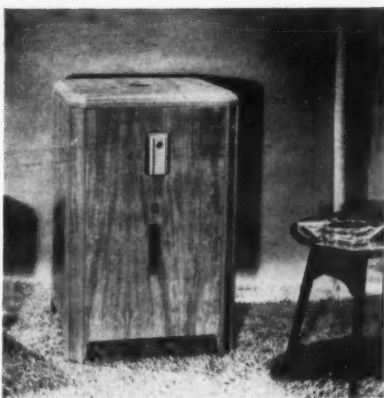
A little detergent and hot water is added, the motor started, and the dishes are automatically washed in less than five minutes, according to the company. Then soapy water is drained, clear hot water added, and the rinsing and drying job is completed automatically.

Outside dimensions of the dishwasher are 16 by 16 by 14 1/4 in. plus motor housing of 3 1/4 in. on top. The unit is made of heavy gauge metal finished in white enamel.

J. W. Alsdorf, president of Cory, stated that the Cory Matic Maid will for the present be made in California. He added that eventually, Cory will augment this production by having mid-continent and eastern manufacturing facilities available.

Production is already underway and initial manufacturing schedules call for approximately 150 units per day, he said.

One Walton Humidifier Has Blond Mahogany Finish



IRVINGTON, N. J.—A new blonde mahogany grain is now available for the Walton cabinet model humidifiers, Walton Laboratories, Inc. has announced.

Both the single and the duplex cabinet models can now be obtained in either a walnut or blonde mahogany grain. The Walton cabinet humidifiers are automatically controlled and evaporate between 5 and 10 gals. of water into the air per day depending upon the model.

COOL PROFITS in AIR CONDITIONING TYPHOON

PACKAGED UNITS

1 1/2 to 20-ton units

NATIONALLY ADVERTISED

TYPHOON Air Conditioning Co., Inc.
794 Union St. • Brooklyn 15, N. Y.

Liftruk Carries 2,500 Lbs., Has Rubber Tired Casters



NEWARK, N. J.—A device for the moving of refrigerator cabinets, showcases, and other bulky objects called "Liftruk" has been introduced by the Thermacote Co. here.

Liftruk is designed to take loads of varying dimensions and has a load capacity up to 2,500 lbs., the manufacturer said. Rubber tired casters enable the movement of loads in tight places and the lever action lift does not require the use of hydraulic cylinders, he added.

A positive lock device on the handle prevents accidental dropping of the load. Liftruk has a very low center of gravity and requires less than 1 in. clearance in order to place its blade under the load.

Being of compact design, Liftruk can be easily carried on a delivery truck, it was said.

The manufacturer states that the truck has been thoroughly tested and that a number of them are now being used by a western refrigeration concern.



Air Circulator Built Into Small, All-Purpose Table

CHICAGO—An all-purpose table with a built-in air circulator has been introduced by the Howard Appliance Corp., division of Howard Industries, Inc., 209 W. Jackson Blvd. here.

The table comes in walnut, mahogany, and bleached mahogany. It stands 27 in. high and has a top measuring 15 1/2 by 15 1/2 in. An extra shelf is located below the top.

The air circulator is mounted under this shelf. It is equipped with a three-blade 12-in. Torrington fan powered by a 1/4-hp. shaded pole EMC motor, 115 volt a.c., 60 cycle. A three-speed switch is located at the base of the fan.

The air circulator is surrounded by a decorative metal screen to protect children, according to the manufacturer. When placed against a wall, the air from the rear is guided upward to circulate out into the room.

The Howard all-purpose table is fully guaranteed. Retail price is \$59.95. For a 115-volt d.c. model, the price is slightly higher.

CutTrove Cuts Through All Metals Without Oxygen



welder can use CutTrove. It says that the Frigidarc coating focuses and concentrates the electric arc energy on one narrow spot and gives a fast clean cut.

The CutTrove is inserted in any electrode holder and struck like a match for use. It is claimed to slice through such hard-to-cut metals as stainless steel, armour plate, brass, copper, bronze, nickel, or monel.

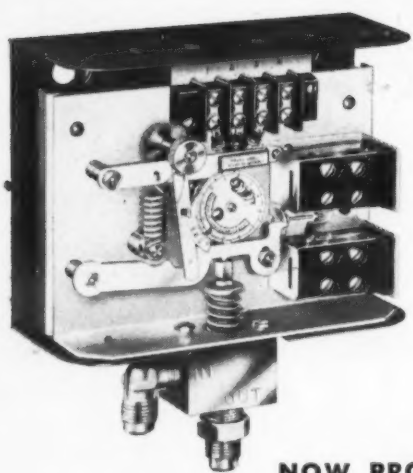
NEW YORK CITY—An electrode which can be used with ordinary a.c. or d.c. welding machines to cut through all metals without the use of oxygen or special equipment is being manufactured by the Eutectic Welding Alloys Corp., 40 Worth St., New York City 13.

The cutting tool, called CutTrove, has a coating which resists high temperatures and directs the electric current through metal like a spear, according to the manufacturer. It has a slow burnoff rate, does not overheat, and will withstand high amperages, the manufacturer claims. It may be used in all positions.

CutTrove can be used for cutting, piercing, gouging, and chamfering. Amperage settings are determined by the thickness of the metal to be cut and range from 80 to 500 amperes for surface use.

The company claims that any

There's a Year 'Round Market For



Fast, Automatic Defrosting

NOW PROVIDED BY

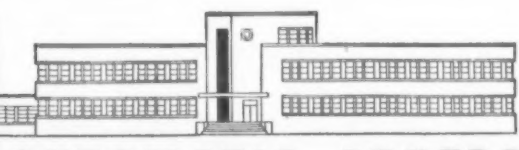
PENN SERIES 321 HOT GAS DEFROSTER

Because it does the defrosting job quickly, dependably and automatically the new Penn Series 321 has been an instant hit. The demand for automatic defrosting is not limited to any season—cooler weather, after peak service load, offers excellent opportunities to increase profits by installing the Series 321.

Rugged and dependable, the Series 321 has done a job on every installation, made friends with installers and users alike. See your refrigeration jobber or write today for full details including wiring and piping diagrams. Penn Electric Switch Co., Goshen, Ind. Export Division: 13 E. 40th Street, New York 16, N.Y., U.S.A. In Canada: Penn Controls Ltd., Toronto, Ont.

USE IT ON
FROZEN FOOD CABINETS
MEAT CASES
BLAST COIL INSTALLATIONS

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

MANUFACTURERS Investigate Today

New Low Prices—Tremendous Savings for Original Installation



MOLDED Du-Cal Drierite or Silica Gel



Spun End Driers with Integral SWEAT or brazed FLARE-END connections:

Makers of — spun end —
DRIERS
ACCUMULATORS
ACCUMULATOR DRIERS

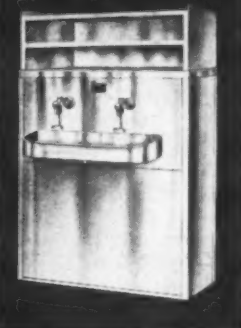
To Order in Production Quantities, Specifications & Prices on Request

REMCO
INCORPORATED
SILICONOPE, PENNSYLVANIA

Manufacturers of Coolers & Filters for over 40 Years

CAFETERIA WATER COOLERS

Stainless steel. Special cafeteria design. High capacity, super storage. Shelves, glass-fillers and/or bubblers as required.



Costs no more Gives much more

Service Satisfaction Dollar value

COOL, CLEAR, DECHLORINATED WATER WITH

FILTRINE FILTER-DECHLORINATORS

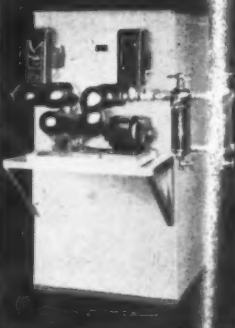
Eliminate tastes, odors, foreign particles. Promote cooler satisfaction — dealer sales.

A Few Choice Areas Open for Factory Representatives

FILTRINE MANUFACTURING CO.
53 LEXINGTON AVE., BROOKLYN 5, N.Y.

INDUSTRIAL PROCESS COOLERS

Temperatures to 34° sustained as set. Special features for bakery, bottling, other processes. Rugged construction.



39 Safety Provisions Incorporated In Basic Construction Code of National Group

DETROIT—Continuing its efforts to write a basic building code that could be enacted by any city in the country and thus achieve national uniformity, the Building Officials Conference of America has adopted a code covering refrigeration, air conditioning, and mechanical ventilation that incorporates the ASA B9 Safety Code of Mechanical Refrigeration.

Industry representatives met with the Special Mechanical Committee of BOCA in Detroit recently to work out the basic code for refrigeration which was put before the group's executive board for adoption.

The ASA B9 code is adopted by reference. This pretty much covers the safety standards. The balance of the BOCA code is devoted largely to administrative problems, setting up requirements for installation and repair permits, inspections, etc.

Going beyond the requirements of the B9 refrigeration code, the BOCA version also adopts the safety standards of the National Board of Fire Underwriters with respect to installation of ductwork for air conditioning, ventilating, heating, and exhaust systems.

These are the NBFU pamphlets No. 90, "Installation of Air Conditioning, Warm Air Heating, Air Cooling, and Ventilating Systems," and No. 91, "Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying."

General chairman of the BOCA special committee is Jos. P. Wolff, Detroit commissioner of buildings and safety engineering, while John C. Rehard, chief safety engineer of Detroit, heads the sub-committee handling the air conditioning, refrigeration, and mechanical ventilation section of the general code.

This is designated as Article 18 of the BOCA Basic Building Code.

Representatives of industry and other interested groups who sat in with this special mechanical committee to draft the refrigeration code included D. M. Abel of Carrier Corp.; L. C. Bastian of Air Conditioning & Refrigerating Machinery Association; E. T. Benson of Frigidaire; Geo. B. Bright of Detroit Ice Machine Co.; J. H. Courtney of the American Standards Association; C. A. Daymude of the Detroit Dept. of Buildings; R. C. Doremus of Detroit Ice Machine; P. H. Lawrenz of Nash-Kelvinator Corp.; J. K. McElroy of the National Fire Protection Association; and C. W. Miller of the Refrigeration Industry Safety Advisory Committee.

"In general, the BOCA code is primarily a performance code, not a code of specifications," explains Rehard. "What specifications there are in the proposed code are designed for life safety."

"BOCA is aiming at a basic uniform building code to cover all phases of building construction and maintenance. Its adoption on a widespread basis would make it easier for manufacturers to build to common standards."

There is no suggestion in the proposed code for the licensing of contractors, but permits would be required for new installations and major replacements in most categories.

Installations not requiring permits would be (1) those in residences containing not more than 10 lbs. of refrigerant and/or motors of 1½-hp. or larger, and (2) self-contained systems containing not more than 6 lbs. of Group 1 refrigerant, as defined in the ASA B9 code.

Periodic inspection would be required of systems in institutional and public assembly occupancies.

Other requirements would limit the steam pressure in heating coils of all conditioning systems to 15 lbs. gauge or less, and would require in institutional and public assembly occupancies that relief valves be installed in return lines from "direct expansion air conditioning coils located downstream from and in close proximity to a heating coil or located upstream within 18 in. of a heating coil."

The five conventional classifications of occupancies are identical with the ASA B9 code, but Article 18 is so worded as to conform with other sections of the BOCA basic building code. For its general purposes the over-all code sets up 17 categories based on type of construction (mostly

with relation to fireproofing), size, etc.

How the ASA B9 occupancy classifications compare with the general BOCA code is shown as follows:

"Industrial" occupancy includes BOCA class A (high hazard), B-1 (storage, moderate), B-2 (storage, low), and D (industrial).

"Commercial" occupancy includes class A (mercantile) and B (business).

"Assembly" occupancy includes F-1A (theaters with stage and scenery), F-1B (theaters without stage, motion picture theaters),

F-2 (restaurants and night clubs), F-3 (recreation centers, lecture halls, terminals), and F-4 (churches, schools).

"Institutional" occupancy includes H-1 (restrained) and H-2 (incapacitated).

"Residential" occupancy includes L-1 (hotels), L-2 (multi-family), and L-3 (one and two family).

The last category on the BOCA general list is "M" for "miscellaneous."

Complete text of the refrigeration section of the BOCA basic code appears below.

Text of Refrigeration Section OF BOCA Basic Code

Article 18

Refrigeration, Air Conditioning, And Mechanical Ventilation

SEC. 1800.0 SCOPE

The provisions of this article shall control the design and installation of air conditioning, refrigerating, ventilating, cooling, and air exhaust systems hereafter installed, and all alterations or additions to existing systems; except refrigerating systems subject to inspection and regulation under federal law; or where specific exemption is made in this article, or where any structure or occupancy use group in Article 4, or where a special kind of ventilating or exhaust installation is required in Sections 517.0 and 518.0 for emergency ventilation, or in the approved rules.

SEC. 1800.1 OTHER STANDARDS. All approved refrigerating systems shall be constructed, installed and maintained in accordance with the provisions of the current American Standard Safety Code for Mechanical Refrigeration ASA B9 as specifically listed in Appendix B and with the approved rules adopted hereunder. All air conditioning, warm air heating, air cooling, and ventilating systems shall be constructed, installed and maintained in accordance with the provisions of the current National Board of Fire Underwriters Pamphlets No. 90 and 91, as specifically listed in Appendix B and with the approved rules adopted hereunder. Compliance with the applicable standards listed in Appendix B shall be deemed to conform to the requirements of this article unless otherwise specifically provided.

SEC. 1800.2 COOPERATING AGENCIES. Nothing herein contained shall be deemed to nullify the federal, state or municipal rules and regulations governing the storage and use of flammable and explosive gases and chemicals, or the requirements of the Interstate Commerce Commission or other Federal statutes governing the transportation and use of hazardous gases, explosives and other flammable substances.

SEC. 1801.0 DEFINITIONS

AIR CONDITIONING. The process by which the temperature, humidity, movement, and quality of air in buildings and structures used for human occupancy are controlled and maintained to secure health and comfort.

DUCT. A tube or conduit, or an enclosed space or corridor within a wall or structure used for conveying air.

FIRE DAMPER. An approved automatic or self-closing, incombustible barrier designed to prevent the passage of air, gases, smoke, or fire through an opening, duct, or plenum chamber.

LIMIT CONTROL. A thermostatic device installed in the duct system to shut off the supply of heat at a predetermined temperature of the circulated air.

MECHANICAL VENTILATION. The process for introducing fresh air or to provide changes of air in a building or structure by mechanical means.

PLENUM CHAMBER. An air compartment or enclosed space to which one or more distributing air ducts are connected.

REFRIGERANT. The medium used to produce cooling or refrigeration by the process of expansion or vaporization.

REFRIGERATION. The process of removing heat by mechanical means from the air in an enclosed space of a building or structure.

RUPTURE MEMBER. A mechanical device that will rupture at a predetermined pressure to control automatically the compressor or maximum pressure of operation of the refrigerant.

SMOKE DETECTOR. An automatic device installed in the plenum chamber or in the main supply air duct of an air conditioning system to shut off the blower and close a fire damper in the presence of smoke.

TON OF REFRIGERATION. The unit of capacity of refrigeration equivalent to the removal of heat at the rate of twelve thousand (12,000) B.t.u. per hour.

SEC. 1802.0 PLANS, SPECIFICATIONS, AND PERMITS

SEC. 1802.0 PLANS AND SPECIFICATIONS. An application shall be filed with the building official accompanied by specifications and diagrammatic mechanical drawings in sufficient detail, complying with the provisions of Article 1, before a permit shall be issued for an air conditioning, refrigerating, or ventilating system. The plans shall be drawn to a scale of not less than one-eighth (1/8) in. to the foot and shall show the location and arrangement of all equipment and distribution elements, including safeties and pressure controlling devices.

SEC. 1802.2 PERMITS. A permit shall be required for all major replacements which may result in violation of this code and for all new installations and for alterations or additions to existing installations or where required for the remedying of existing defective installations; except that systems for use in one and two-family and multi-family residences shall not be required to have permits, unless the refrigerating systems contain more than ten (10) pounds of refrigerant and/or are actuated by motors or engines of one and one-half (1½) horsepower or larger. No permit shall be required for the installation of new self-contained unit refrigerating systems containing not more than six (6) pounds of Group 1 refrigerants in commercial and industrial or residential occupancies. (See American Standard Safety Code for Mechanical Refrigeration ASA B9 Code for definition of self-contained unit refrigerating system and for classification of Group 1 refrigerants).

SEC. 1802.3 APPROVED REFRIGERANTS. It shall be unlawful to maintain or operate any refrigerating system without a permit and certificate of approval and no refrigerant other than that specified in the approval or provided for in this article or in the approved rules adopted thereunder shall be employed in the system.

SEC. 1803.0 TESTS

No air conditioning, refrigerating, or ventilating system requiring a permit shall be operated or permitted to be operated until it has been tested and found safe by the building official.

SEC. 1804.0 INSPECTIONS AND CERTIFICATES

All systems requiring permits shall, upon their completion, be inspected by the building official. If the mechanism is found safe and in conformity with the requirements of the Basic Code and the approved application, a certificate to that effect shall be issued, upon request, by the building official.

SEC. 1804.1 CONCEALMENT. It shall be unlawful for owners, contractors, or workmen to lath over, or in any way conceal, any piping, outlet boxes, or other parts of a refrigeration system until an inspection has been made thereof and due notice given that the work has been approved.

SEC. 1804.2 PERIODIC INSPECTION. Refrigerating systems in institutional and public assembly occupancies shall be inspected periodically and all refrigerating systems shall be subjected to such inspections and tests as are deemed necessary for the adequate protection of the public safety.

SEC. 1804.3 DEFECTS AND REPAIRS. Upon inspection or reinspection or a refrigerating, air conditioning, or ventilating system, any defects or deficiencies in any part of the system which require repair to insure safe operation shall be immediately rectified before the system is placed in use.

SEC. 1804.4 POWER OF CONDEMNATION. Whenever a system or any part thereof is found to be unsafe to life or property, it shall be forthwith condemned, and no such system shall thereafter be used until put in a safe condition and approved.

SEC. 1805.0 OPERATION AND MAINTENANCE

SEC. 1805.1 HOUSEKEEPING. All air conditioning and refrigerating systems shall be maintained in a clean and orderly manner, free from accumulations of oily dust, waste or other debris; and all piping and machinery shall be kept readily accessible at all times for inspection and repair. Plenum chambers, ducts, cooling and heating coils shall be kept clean, and unit filters shall be cleaned or renewed to insure adequate air flow in accordance with the approved rules.

SEC. 1806.0 EXISTING BUILDINGS AND INSTALLATIONS

SEC. 1806.1 EXISTING APPROVALS. Existing refrigerating, air conditioning, and ventilating equipment heretofore legally installed may be continued in use, provided the public safety is not endangered thereby, and the system is maintained in a safe operating condition as required by the building official and in accordance with the approved rules.

SEC. 1806.2 UNSAFE INSTALLATIONS. If in the opinion of the building or fire officials, the continued use of existing equipment is unsafe, the building or fire official shall order such use to cease until all defects are remedied.

SEC. 1807.0 ACCIDENTS

SEC. 1807.1 NOTICE TO BUILDING OFFICIAL. The owner, lessee, or person

in charge of refrigerating or air conditioning systems which employ more than twenty (20) pounds of refrigerant shall immediately notify the building official of each and every accident to a person involving medical attention or damage to apparatus or property of one hundred (100) dollars or more on or about or in connection with said installation; and he shall afford the building and fire officials or other authorized municipal agent every facility for investigating the accident.

SEC. 1807.2 DAMAGED EQUIPMENT. The removal of any part of the damaged construction or operating mechanism from the premises is forbidden until permission has been granted by the building official.

SEC. 1807.3 RESTORATION OF USE. When an accident involves the failure or destruction of any part of the system, operating mechanism, or of the structure housing the equipment, the re-use of the installation shall be unlawful until it has been made safe.

SEC. 1808.0 CLASSIFICATION OF REFRIGERANTS

It shall be unlawful to maintain or operate any system employing a refrigerant other than those specified in accordance with the provisions of the approved standards adopted hereunder.

SEC. 1809.0 USE OF REFRIGERANTS Only approved refrigerant shall be used in any installations as determined by the life hazard of the use and occupancy of the building or structure and for the purposes of refrigeration and air conditioning installations the building occupancy classifications of the American Standard Safety Code for Mechanical Refrigeration ASA B9 shall apply.

SEC. 1809.1 INDUSTRIAL OCCUPANCY. Subject to the approved standards and the requirements specified in the Basic Code, this classification shall include use Groups A, B1, B2, and D.

SEC. 1809.2 COMMERCIAL OCCUPANCY. Subject to the approved standards and the requirements specified in the Basic Code, this classification shall include use Groups C and E.

SEC. 1809.3 PUBLIC ASSEMBLY OCCUPANCY. Subject to the approved standards and the requirements specified in the Basic Code, this classification shall include use Groups F1, F2, F3, and F4.

SEC. 1809.4 INSTITUTIONAL OCCUPANCY. Subject to the approved standards and the requirements specified in

the Basic Code, this classification shall include use groups H1 and H2.

SEC. 1809.5 RESIDENTIAL OCCUPANCY. Subject to the approved standards and the requirements specified in the Basic Code, this classification shall include use groups L1, L2, and L3.

SEC. 1809.6 MIXED OCCUPANCY. Mixed occupancy shall apply to a building occupied or used for different purposes in different parts. When the occupancies are cut off from the rest of the building by tight partitions, floors, and ceilings and protected by self-closing doors, the requirement for each type of occupancy shall apply for its portion of the building. For example, the cold-storage spaces in retail frozen-food lockers, hotels and department stores might be classified under industrial occupancy, whereas other portions of the buildings would be classified under other occupancies. When the occupancies are not so separated, the occupancy carrying the more stringent requirements shall govern.

SEC. 1810.0 HEATING EQUIPMENT AND WATER CONNECTIONS

SEC. 1810.1 STEAM AND HOT WATER HEATING EQUIPMENT. The installation of all steam and hot water apparatus in air conditioning systems shall comply with the requirements of Articles 10 and 11 for piping, flues, and flue connections. Direct heating units when used in air conditioning systems shall be equipped with an approved temperature limit-control device. The steam pressure in heating coils of all air conditioning systems shall not exceed fifteen (15) pounds per square inch gauge pressure.

SEC. 1810.2 RELIEF DEVICES REQUIRED. In institutional and public assembly occupancies the return refrigerant line from direct expansion air conditioning coils located downstream from and in close proximity to a heating coil or located upstream within eighteen (18) in. of a heating coil shall be fitted with a relief valve set not to exceed the maximum allowable test pressure for the return line and discharging to the outside of the building.

SEC. 1810.3 WATER CONNECTIONS. Discharge water lines from condensers shall be connected to prevent siphoning into potable water supply lines and no water used for removing heat from a refrigerating system shall be discharged into any water supply directly or indirectly intended for human consumption.

VIRGINIA

Refrigerants

"EXTRA DRY ESOTOO"
Liquid Sulfur Dioxide

"V-METH-L"
Methyl Chloride

consistently pure
consistently sure

VIRGINIA Refrigerants

West Norfolk • New York
Boston • Detroit

VIRGINIA SMELTING COMPANY
WEST NORFOLK, VA.

Distributors for
Kinetic's "Freon" Refrigerants

SERVING INDUSTRY FOR 50 YEARS



Room Air Conditioners

ASRE Conference Sees Continued Growth of the Market,
Finds Many Product, Installation Problems Need Study

CHICAGO—"During its first 10 years the room air conditioner industry sold perhaps 131,000 units. During the past four years the industry has retailed 235,000 room air conditioners for \$99 million. It is predicted that in the next four years it will retail just under 1,000,000 units for just over \$300 million."

That was the statistical summation of the room air conditioner market offered by Herbert L. Laube of Remington Corp. as he opened the Room Air Conditioner Conference, which was part of the recent annual meeting of the American Society of Refrigerating Engineers at Edgewater Beach hotel here.

But most everyone at the conference agreed that certain engineering and design problems would have to be solved before 1,000,000 units could be sold in the next four years, and a good representation of the top flight engineers working on room air conditioners had their say on these problems at the conference.

Those taking part in the formal discussion, in addition to Laube, were R. W. Morgan, chief engineer, Fedders-Quigan Corp.; Carl Wood, room air conditioner development engineer, Carrier Corp.; John H. Jennings, chief engineer, Mitchell Mfg. Co.; M. C. Terry, chief engineer, Air Conditioner Department, Philco Corp.; Paul B. Moore, equipment development engineer, York Corp.; and H. J. Prebenson, vice president, Air Comfort Corp., Chicago (representing the dealer's point of view).

What Room Unit Offers

Laube, in his opening remarks at the conference, expanded on his views about the market as follows:

"It was the inherent and demonstrable advantages of the single room air conditioner that caused it to become an article of commerce 16 years ago. It still offers these same advantages today, namely:

"1. It provides the least costly refuge from summer's heat that an individual can buy—the only refuge within the purchasing power of millions of people everywhere.

"2. It makes the user independent of outside factors, such as operating schedules, and thus offers a greater degree of individual control than is provided by any other system of air conditioning which has so far come into commercial use.

"3. It lends itself to specialty selling methods and, in general, is commercially attractive.

"4. It lends itself beautifully to the mass production techniques which, in the case of so many other products, have given the consumer the best value for his dollar.

"5. It can be installed in existing buildings more quickly and easily and with less inconvenience to the occupants than any other system.

Pre-War Pace Slow

"But sales pre-war grew at only a snail's pace. Getting reasonably complete figures on pre-war sales has been impossible. The detailed figures in Table I, except for three or four years, are nothing more than an 'educated guess.'"

"In any case, total pre-war sales appear to have been 131,000 units, covering a 10-year stretch. For the five years following 1936, the rate of growth averaged about 25% per year.

"Why didn't this baby do better by its proud parents? It was born prematurely. Its components had not yet been properly developed. But despite all that, it grew until it was stopped by the war.

"Table II gives the post-war story. With fewer manufacturers in the field and materials still extremely scarce,

Table I—Estimated Pre-War Room Air Conditioner Sales

Through	
1933	2,000
1934	3,233
1935	6,000
1936	10,000
1937	13,000
1938	13,350
1939	21,500
1940	30,873
1941	31,339
1942	10,000
Total	131,295

production in 1946 was resumed at the 1941 rate. In the three years since then production has trebled from 29,835 units produced in 1946 to an estimated 93,000 in 1949. Retail sales did even better. They almost quadrupled. Inventories carried over from 1948 were moved this year, so that total retail sales appear to have been over 100,000 units in 1949.

Forecast for 4 Years

"The second half of Table III is a projection for four years (1950 through 1953) of the actual figures from 1946 through 1949. In the interests of conservatism the annual rate of growth has been constantly diminished in this forecast. For 1949 the actual rate was 50%. The assumed rates of growth for each of the four following years have been taken as 45, 40, 35, and 30%, respectively.

"Does the forecast make sense? It's hard to say. It has been suggested, but appears doubtful that the growth of this business will parallel the phenomenal growth of the electric refrigerator. This year's room air conditioner volume is a little above the 1925 refrigerator figures of 75,000 units for \$31,875,000.

"Four years after 1925—that is, in 1929—the number of electric refrigerators sold had multiplied by 10 while the total price multiplied by 6. So maybe the projection in Table III which calls for 3½ times as many units to be sold for three times as many dollars, is way too conservative.

"It seems so when we realize that the retail value of electric blankets sold in 1948 equalled almost exactly the retail value of room air conditioners—\$28,000,000 in both cases—and that, in the same year, 675,000 home freezers were sold, 10 freezers for every air conditioner.

Market Biggest of All?

"The projection seems even more conservative when we consider where the room air conditioner is used—in offices, bedrooms, living rooms, and other rooms of the 35,000,000 wired homes in this country—and that every prospect for one air conditioner, if satisfied with his first purchase, is a prospect for at least one more.

"Are there more bedrooms than butcher shops? Are there more dining rooms than delicatessens? Are there more offices than eating houses?

"The answer in every case is 'yes.' Yet over 800,000 commercial condensing units were sold in 1948, to markets, restaurants and the like. Is it over optimistic, then, in the light of this figure, to expect to sell less than half that many room air conditioners in 1953?"

The projection given assumes that the ill fated ½-hp. room air conditioner will not again appear on the market—yet there is a real possibility that it may, for better or for worse, Laube stated. The projection also assumes that, as the design of room air conditioners evolves, new

models will appear which will be especially well adapted for use in those buildings for which existing models are not well adapted.

Room air conditioner prices have kept closer to pre-war figures than most other products, Laube declared. While most electrical goods have gone up around 40% from 1941 prices, the room air conditioner still sells for \$45 per 1,000 B.t.u. today, the same as it did in 1940. And current models are more compact, better appearing, and more efficient. Mass production and engineering developments should lower the price over the next four years, he predicted.

What Are Design Factors?

Morgan, the Fedders-Quigan chief engineer, discussed design problems in both past and present days, and showed an interesting collection of slides to illustrate some of the designs.

Design factors for the room air conditioner field fall into three classifications, Morgan explained:

(a) Physical and operational characteristics.

(b) Restrictions imposed upon the designer by codes and ordinances.

(c) Application problems.

(a) In the category of physical design problems it would appear that a successful air conditioner must have the best treatment of the following factors:

1. It must have ample capacity to take care of average sized rooms under normal summer conditions.

2. It must be small in size so as to be unobtrusive in offices, living rooms, and bedrooms. Its width should be such as to allow installation in a standard 27-in. window. It must also be light in weight to allow installation with minimum manpower.

3. It must be quiet in operation so as not to interfere with normal conversation in an office or sleep, if used in a bedroom. It must also be quiet in operation from outside of the building so as to cause no disturbance to neighbors.

4. It must be low in cost.

5. In the lower capacities, unit must be a factory engineered, self-

Room Air Conditioner Gets a Definition

At the Room Air Conditioner Conference held during the recent ASRE convention in Chicago, Herbert L. Laube of Remington Corp. offered the following definition of a room air conditioner:

"A room air conditioner is a substantially self-contained mechanism the principal component of which is an electrically driven refrigerating machine of less than 2-hp., either air or water cooled. It is used primarily for summer cooling of the occupants of the room in which it is located, also provides air drying, circulation, ventilation and filtering, and operates at a noise level and is finished in a manner acceptable to the room occupants for whose personal well being it is intended."

contained unit ready to be plugged into a 15 amp. wall receptacle when uncased, without special wiring.

6. Air cooled units must not have water connections or drain connections so as to be easily installed and easily moved to another location.

7. It must be styled for eye appeal and to blend harmoniously with any type of office or home surroundings, as well as on a well-lighted salesroom floor.

8. It must be reliable as a domestic refrigerator, which pretty much demands the inclusion of a hermetic refrigerating system.

Operating Characteristics

Some of the operating characteristics of a good unit, as Morgan outlined them, are as follows:

9. Materials selected for components of the unit must be such that they will last the life of the compressor and fan motor under normal weather conditions.

10. The unit should be designed to allow the use of the unit not only for cooling, but for ventilating and for exhausting odors.

Table II—Room Air Conditioner Post-War Manufacturing Picture

1	2	3	4	5	6
Year	*Total No. of Units Made	*Total Reported Factory Selling Price	*Average Factory Selling Price Per Unit	Estimated Year-End Carry-Over Units %	Estimated Retail Sales No. of Units
1946	29,835	\$ 5,870,000	\$197.00	2,835 9.5%	27,000
1947	42,904	9,930,000	231.00	4,739 11.0%	41,000
1948	73,638	15,503,000	210.00	11,377 15.0%	67,000
1949	93,000	17,670,000	190.00	4,377 4.5%	100,000
Totals	293,377	\$48,973,000			235,000

*Source of figures for 1946, 1947, and 1948, Bureau of Census, United States Department of Commerce.

Table III—Room Air Conditioner Post-War Retail Picture 1946-1953

1	2	3	4	5
Year	No. of Units Sold at Retail	Increase Over Previous Year Per Cent	Estimated Retail Price Per Unit (Installed)	Total Retail Price Installed
1946	27,000	—	\$410	\$ 11,100,000
1947	41,000	52%	470	19,200,000
1948	67,000	63%	430	28,800,000
1949	100,000	50%	400	40,000,000
Totals ('46-'49)	235,000			\$ 99,100,000
1950	145,000	45%	350	51,000,000
1951	203,000	40%	333	68,000,000
1952	274,000	35%	316	87,000,000
1953	356,000	30%	300	107,000,000
Totals ('50-'53)	978,000			\$313,000,000

11. It must dispose of condensate without dripping either inside or outside the building at reasonably low outside temperatures (80° d.b.) with high relative humidities (90%).

12. It must not sweat to the point where it will drip on the floor causing damage to floors or rugs.

13. It must run with outside air temperatures up to 115° F. with voltages at 90% of rated without interruption.

14. It must operate without freezing up or cutting out on the overload at all conditions of operation covered by the summer zone of the ASH&VE comfort chart.

What Are the Restrictions?

Some of the more prevalent restrictions brought about by certain codes and ordinances are:

1. Restrictions brought about by Underwriters' Laboratories—wiring codes, refrigeration system codes, and industrial control codes.

2. Restrictions brought about by electric power companies limiting unit locked rotor current because of lamp flicker.

3. Building restrictions calling for non-projection of conditioners beyond window line.

4. Restrictions brought about by window washers in certain metropolitan areas.

5. Restrictions brought about by court decisions resulting from neighborhood noise complaints.

6. Restrictions brought about by excise tax on units under 10,000 B.t.u./hr. ASRE capacity.

Problems of Application

Another series of problems come about in the application of air conditioners, said Morgan. Some of the more important ones are as follows:

1. Application in the multitudinous type of casement or metal type windows.

2. Development of a method of sizing the unit to a given room load so that a salesman can be assured of having the unit handle the load.

3. Design of an adequate window mounting flexible enough to take care of the various types of metal hung sash windows and various stages of decomposition. This mounting should be designed so that it can be attached securely to the window sill so that the unit cannot drop out of the window, nor should it cause drafts if the conditioner is left in the window through the winter.

4. Application problems brought about by consideration of air cooled vs. water cooled units.

5. Comparative advantages of single room type coolers vs. central station systems in new and existing buildings.

6. Problems brought about in applications to the export market where loads are unusual and power variations great both in variety of characteristics and voltage regulation.

7. Application to low voltage lines.

8. Vibration problems brought about by application of units to bedrooms located in upper floors of frame houses.

Perhaps the most difficult problem in regard to application of room air conditioners to bedrooms is the problem brought about by noise and vibration and in reducing the manufacturing cost of a unit with adequate capacity to a level which will allow the mass market to purchase, Morgan declared.

Bedroom Difficulties

Perhaps the greatest difficulty in applying a unit to a bedroom is brought about by placing a window type unit on the window sill of a double hung sash window located in a frame house. In frame houses the compressor vibrations are very difficult to dampen out to the extent that they are telegraphed through the studding to other living quarters. It would appear, he said, that in order to minimize or eliminate this difficulty that a window mounting must be designed to better cushion the entire conditioner.

Another engineering problem present in bedroom applications is reducing the air noise both inside and out to a point where persons of average nervous temperament will not be disturbed. This brings into prominence the problem of quiet fan design.

An approach to quieting down fans is to reduce the fan motor r.p.m., which immediately makes the fan large in diameter, and/or deep in pitch, bringing about dimensional difficulties. Noises amplified by the fan blades also must be minimized perhaps by the use of rubber insulated hubs or use of plastic material for fans.

Another annoying noise problem is brought about by the occurrence of beats produced by slight differences in frequencies of compressor pulsations and fan r.p.m.'s.

2-Speed Switch an Answer?

Another approach to the bedroom unit, Morgan stated, is to incorporate a 2-speed switch to reduce the capacity and, therefore, the noise level of the fans when the owner of the unit retires. This seems to be feasible since the sun load disappears after sundown leaving residual heat in the building structure. If the unit is run in the early evening, the high capacity of residual heat can be reduced.

The bedroom unit should also have features such as that it can be used the year-round, which means provision for a reasonable amount of outside air. The mounting for such a unit should be such that it can be left in the window year-round without annoying cold drafts.

One serious problem brought about by bedroom applications is the noise level of the condenser air stream. Obviously, the noise level of the condenser air is higher due to the fact that it is roughly 25% greater than the evaporator air volume. It must be remembered that a person sleeping across a court or driveway on a very hot night does not like to be listening to the noise of a neighboring air conditioner.

It has been found that proper design of the condenser air system, as well as by the use of a sound deadening hood, that this complaint is minimized.

Wood Talks About Noise

Wood of Carrier, speaking on noise and vibration problems, pointed out that any room air conditioner design is a compromise between noise, physical size, cooling capacity, and cost. Noise problems are many and varied, and their solution offers many opportunities for engineers both inside and outside the industry, Wood declared. Noise is compromised by size, Wood said, which limits what can be

(Concluded on next page)

Here's Your New
HARRY ALTER'S DEPENDABOOK No. 151

Bargains! BARGAINS!
Page after page of bargains in refrigeration parts and supplies—some 60% below standard prices. Everything guaranteed as described—money-back guarantee... 2% discount for cash... Get the new DEPENDABOOK and stock up. Buy your 1950 needs NOW! WHOLESALE ONLY

"Service Doesn't Falter When It Comes From Harry Alter"

THE HARRY ALTER CO.
1728 S. Michigan Avenue
Chicago 16, Illinois
134 LaFayette Street
New York 13, N. Y.

REFRIGERATION PARTS CATALOG

Room Air Conditioner Design--

(Concluded from preceding page)

done with thicker panels for less noise transmission, larger air passages for lower velocities, the shape of air passages, and arrangement of component parts for smooth air flow.

Noise is in proportion to cooling capacity in that a larger capacity requires more air with its accompanying larger or higher speed fans and larger compressor. Both capacity and physical size prohibit the use of a gravity condenser such as the domestic refrigerator designers have been able to use.

"Considering the noise problem in more detail we can divide it into several classifications," Wood said. "These are air, compressor, motor, and water noise."

"Condenser air must be drawn into the unit, then forced back almost on its own tracks to the outside again. Conditions such as this pose a real problem in designing air passages for smooth flow."

"Assuming we were allowed enough space in a unit to use thick panels and thus prevent the transmission of condenser air noise into the room, we still have to contend with neighbor Jones who cannot tolerate a noise from which he gets no benefit."

Whence Comes the Noise

"On the evaporator side we are at least blessed with less air requirement than on the condenser side. However, since the recirculated and cooled air must necessarily have access to the room, the problem of masking the noise is greater than for condenser air."

"Finally, in the discussion of air noise, it should be brought out that heat transfer surface with its multitude of sharp edges and sounding-board fins is of no help in the reduction of noise."

"Now we turn to compressors, where we may get any noise from the sound of a meat grinder to that of a canary."

"Piping vibration and transmission to megaphoning panels is a considerable problem due to the large tubing diameters required."

"Vibration isolation must be developed to a fine point. Units are often installed in houses with very flimsy walls which act as wonderful amplifiers for compressor vibration. Also, since the unit must be connected to a window by some means or other, there is the problem of window rattles."

"Periodic change of noise due to thermostatic operation is a first rate irritation to the listener as he waits impatiently for each cycle."

"The third troublemaker in the noise problem is motor hum. The compressor motor contributes a considerable share of a.c. hum which may be transferred through the piping and mounts. The fan motors present problems of resonance with fans in addition to transmission through mountings."

Design for Market, Moore Says

"No industry can go very far towards stabilization and mass markets if ownership is considered to be a luxury or application is limited by basic design to a small segment of the potential market," said Moore of York Corp., in speaking on physical design requirements of room air conditioners.

"Present room air conditioners are in this class, because installations are limited by inability of basic designs to fit many types of windows."

"Even when applied as designed, they often interfere with such fundamental operations as window cleaning and maintenance and many times so detract from building appearance that building owners and architects rule them out."

"It is reasonable to assume that the present practice of depending upon field inspired methods of installation in all but the basic double hung windows must give way to a new approach that will fit all kinds of windows and permit those windows to be cleaned."

Must Consider Installation

"The present widespread acceptance of window sill mounted units is possible only because there have been sufficient double hung windows to take the output of the industry to date and no appreciable increase in output can be expected unless new designs are capable of more universal application, without the use of makeshift, field inspired gadgets."

"Therefore physical designing of the future will undoubtedly have to

start with the installation fundamentals and work towards the components instead of designing the easy way and letting the installer worry about how to solve the installation problems."

"Unit life must be lengthened by better selection of materials and processes and maintenance simplified to justify long range operation."

"Specialized design to meet some particular market or local condition may be justified by reduced costs and easier handling but generally any room air conditioner of the future that is developed for national distribution through established merchandising channels must recognize certain basic physical design requirements that are missing in present designs, by keeping in mind that basically a room air conditioner is an extremely high powered refrigeration system, that is of necessity packed into the smallest possible space, which gives it the advantage of being capable of furnishing comfort to the masses at the lowest possible cost."

"To fully realize this advantage, physical design must be slanted towards greater utility that will make the masses want to buy or at least provide the merchandising people with sufficient inspirational incentives to create such desire for ownership."

Jennings Tells of Regulations

As public acceptance of the room air conditioner increases, it will be subject to greater scrutiny by municipal code authorities, and also by utility companies, it was pointed out by Jennings, Mitchell Mfg. Co. chief engineer, who discussed "Factors of Room Air Conditioner Regulation and Legislation."

There is a definite need of providing proper and adequately designed window-type units in order to satisfy safety requirements, Jennings said. Also, there is much to be said towards education of service personnel in order that the installation will be properly made."

A Deputy Inspector of the City of Chicago Cooling Plant Inspection Department recently told Jennings that "There is a need of properly trained service personnel for installing window units."

In regard to pressure relief valves and venting of highsides, the Chicago Deputy Inspector declared, "Room air conditioners of refrigerant capacity not to exceed six pounds and the cooling capacity not in excess of one-ton require no method of relief, provided the system used a capillary tube for refrigerant control and employed no refrigerant receiver. If the system did have a receiver and employed an expansion valve, it did require proper relief."

Some Codes Antiquated

As to electrical regulations, some of the largest cities have antiquated codes, Jennings said. One code allows a "plug-in" of appliances or equipment not to exceed 660 watts in a 115-volt line. This is most unrealistic inasmuch as the household electric iron and toaster generously exceeds this current limitation."

Generally, electric power companies have accepted a locked rotor ampere rating of 40 amperes plus or minus 15%. This totals 46 amps for use of a ¾-hp. air conditioner connected to a 115-volt outlet. Only one exception to this allowable use of a ¾-hp. unit has been encountered this past summer in one southcentral state."

Thermostatically controlled ¾-hp. units should not generally be connected to 115-volt sources. The intermittent operation will cause heavy current surges at intervals. If a circuit is slightly overloaded, this will cause lights to flicker and result generally in inadequate electrical service within the building. Here again, operation of the unit on 230 volts would be acceptable with thermostatic control."

Special N. Y. 'Gimmick'

New York City requires a 3-prong polarized connector for ½ and ¾-hp. room air conditioning unit operation. If the wall outlet to which the unit is to be connected will not receive this type, it must be replaced."

Jennings said that the Edison Electric Institute headquarters in New York City could supply information on the 46 amp. restriction for locker rotor currents."

Some design considerations that those selling room air conditioners in the field would like the manufac-

Top Engineers Take Room Conditioner 'Apart' for ASRE Audience



—Photo by Irving Alter, The Harry Alter Co.

A good representation of the top talent in room air conditioner engineering circles is included in this panel of discussers at the Room Air Conditioner Conference held during the recent annual ASRE convention in Chicago. Standing is Herbert L. Laube, president of Remington Corp., who presided at the conference. Seated, left to right, are M. C. Terry, chief engineer, Air Conditioner Department, Philco Corp.; John H. Jennings, chief engineer, Mitchell Mfg. Co.; Carl Wood, room air conditioner development engineer, Carrier Corp.; R. W. Morgan, chief engineer, Fedders-Quigan Corp.; H. J. Prebenson, vice president, Air Comfort Corp., Chicago distributor; and Paul B. Moore, equipment development engineer, York Corp.

turers to think about were discussed by Prebenson of Air Comfort Corp., Chicago firm which has done an outstanding job of selling such units. Prebenson urged consideration of the following:

Dealer Offers Suggestions

A High Degree of Quietness—This might be defined, he said, as the "greatest possible absence of noise." Many of the best prospects live in suburban areas, and are accustomed to very quiet surroundings.

Improved External Appearance—Both inside and outside. Householders want external protuberances minimized, and want the interior design to work in harmoniously with other furnishings.

Easily Replaceable Filters—Build goodwill and future sales by sparing owners annoyances on this function.

Capacity for Full Ventilation—The room conditioner's use as a filtering and ventilating device is probably as important as its cooling function, so it must have capacity for full ventilation.

Make Controls Simple

Simplicity of Control—Don't make it difficult for the user to use. Adequate labeling is all important, too.

Complete Weatherproofing—This means complete waterproofing, also. Prebenson advocates use of stripping between the unit and the window ledge to keep out dirt and the elements.

Trouble-Free Mechanisms—Owners won't permit their bedrooms to be turned into repair shops. Oilless bearing fan motors are recommended. Prebenson advocates the type of maintenance contract which provides for the unit to be picked up for cleaning and checking each year.

In answer to a question from the audience as to whether or not he considered the "pump out" function vital in room air conditioners, Prebenson answered in the negative. He believes sufficient air dilution is possible by opening of doors.

Terry on Grille Location

Present design factors and limitations in the matter of room air circuits, blowers, grille locations, and velocities were discussed by Terry, chief engineer of Philco's room air conditioner department.

Centrifugal-type fans offer the advantage of greater quietness and a better static pressure factor with increased air handling, and thus make possible smaller coil faces, Terry explained.

Propellor-type fans are, however, less costly, but if used on the condenser, a condensate slinger ring is generally necessary, and this is an added cost factor.

In window-type conditioners the propeller fan can be used for both the conditioned air and the condenser air, Terry said, except where a high outside air requirement is a factor, or where a high pump-out ratio is deemed necessary.

The Philco engineer said that either type of fan should be operated at low speeds to reduce noise levels. Fan speeds in excess of 1,140 r.p.m. create noise levels which call for acoustical treatment, he stated.

(It was brought out in a discussion from the floor that 1,140 r.p.m. need not be a limiting factor on fan speeds, if the engineers would work out design factors and design conditions which would permit greater speeds.)

Location of the discharge air grille may generally be dictated by the

arrangement of parts in a room air conditioner, Terry stated. If the discharge is on top of the unit, it may cut down on noise, but it eliminates any use of the top of the unit for other purposes, prevents adjustment of air stream downwards, and a shade or window blind may interfere with the air stream.

If located in the front of the unit, maximum flexibility in adjustment is offered. Location of the outlet at the front should be as near the top as possible, Terry stated.

Discharge Velocities

On discharge velocities the speaker said that recommended practice is 300-550 f.p.m. for ½-hp. units if the air flow is directed at the ceiling; somewhat less is directed straight out into the room.

For a ¾-hp. unit the discharge velocity range is from 900-1,100 f.p.m. Sufficient discharge velocities are especially important if the room air conditioner is located at one end of a long room.

Return grille location is pretty much predicated on keeping the discharge and return air paths from conflicting.

Floor discussion following the pre-

pared discussions brought up some pertinent points.

How Long Should Unit Last?

The question was asked "What should be the life of a room air conditioner?" Consensus seemed to be that 10 years should be the minimum life of a room unit.

Murray of the Chicago Refrigeration Inspection Department was spotted in the audience and was asked what characteristics he would like to see in room air conditioners. "Make 'em so they won't fall out of windows" was his comment.

Dick Swartt of Carrier brought up the point that while manufacturers seem to feel it necessary to equip units with 115-230-volt motors, current in many metropolitan areas is often found as low as 208 volts, and he raised the question as to whether or not 110-220-volt motors might not be standardized upon.

A representative of the Federal Works Administration in Washington who is responsible for maintenance on some 8,000 room air conditioners came out for units equipped with propeller-type fans, stating that they simplified the cleaning and maintenance problem.

Speed installation with Kno-Draft the completely adjustable air diffusers

Helps get job OK's faster, too!

Kno-Draft's adjustment features not only help you get off the job faster—with a well satisfied OK—but they eliminate the tough job of figuring everything about the air movement in advance. If people or partitions are relocated while the job is in progress, you can adjust to the changes in a jiffy. A screwdriver adjusts the three suspension bolts for any angle of air discharge from horizontal to vertical (Fig. 3). Balancing is fast and easy. The single annular air stream permits immediate and accurate velometer reading (Fig. 4). A twist of the wrist regulates the air volume instantly (Fig. 5).

Kno-Draft self-contained inner unit (Fig. 1) and the Type HD set-lock assembly (Fig. 2) cut installation time in half, according to contractors who have used them for the first time. They're especially handy where ceilings already exist. Then it's a simple job to remove the inner assembly, attach the outer cone to collar or duct and reassemble the diffuser. The outer cone slips over the suspension bolts and is secured by a slotted washer which keeps the spring-loaded catch in compression (Fig. 2).

Send for FREE handbook on air diffusion. It contains up-to-date data that simplifies the selection and application of Kno-Draft Diffusers. It shows how you can get top efficiency from an air conditioning system. Please write Department A-50.

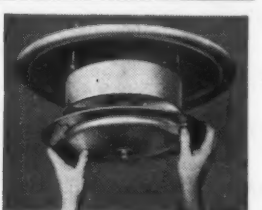
W. B. CONNOR ENGINEERING CORP.

Air Diffusion • Air Purification • Air Recovery

112 East 32nd Street

New York 16, N.Y.

IN CANADA: Douglas Engineering Co., Ltd., 190 Murray Street, Montreal 3, P. Q.



(Fig. 1) Self-contained inner unit



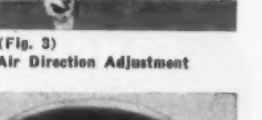
(Fig. 2) Type HD set-lock assembly



(Fig. 3) Air Direction Adjustment



(Fig. 4) Balancing



(Fig. 5) Air Volume Adjustment

Guide to Stories Which Ran In the News In '49

Editor's Note: The following is a listing of some of the stories and articles appearing in AIR CONDITIONING & REFRIGERATION NEWS during the year 1949, classified by general type of subject matter.

In no sense, however, can this list be construed as a complete index of material that has been published in the NEWS during the past 52 weeks. Rather, it is a compilation of the headlines or titles of the more significant articles to which readers may wish to refer.

Those who desire back copies of the issues in which a particular article or articles are listed, may order them at the standard price of 20 cents per copy. However, we are out of stock on a number of issues and thus can't guarantee to fill all orders. See box on opposite page for list of available issues.

Air Conditioning

AIR CONDITIONING, COMMERCIAL

Room Conditioner Dealer (St. Louis) Builds Business on Telephone Listings of Professional Men. Jan. 24, p. 15.
120-Ton Air Conditioning System in Denver Hospital Uses 100% Fresh Air, Controls Explosion Risks. Jan. 31, p. 5.
'Super' System Planned for 36-Story Park Ave. Skyscraper Will Condition Both Inner and Outer Spaces of Each Floor Independently. March 7, p. 13.
Flexibility of Packaged Air Conditioning Units Helps Theater Operators Remodel Without Undergoing Prohibitive Costs. March 7, p. 23.
Promoting 'Store Modernization' Angle Brings Dealer Air Cooling Contracts as Well as Commercial Equipment Sales. March 14, p. 27.
'Lead-Off' Duct Uses Extra Exhaust Air To Cool System's Evaporative Condenser. March 28, p. 6.
Theater Cooling Standards Sought. April 18, p. 1.
Mobile Air Conditioners Cool Movie Sets, 3 Million Cu. Ft. Pan-Pacific Exposition Hall at Los Angeles. April 18, p. 10.
'Package' Air Conditioners Open New Market in Theater Cooling Field. April 18, p. 14.
Professional Men Are No. 1 Prospects for Home Air Conditioners, Washington, D. C. Dealer Finds. April 18, p. 16.
5-Ton Air Conditioning Unit Suspended from Garage Ceiling Saves Fairfield, Ill. Funeral Home Floor Space, Allows Clearance for Car. April 18, p. 42.
Air Intakes, Outlets for Cafe System Shaped to Harmonize with Pattern of Room Design. May 2, p. 17.
Telling a Good Story (example of unusual air conditioning advertisement). May 2, p. 22.
Proper Application of Package Air Conditioners to Theaters by Don V. Petrone. May 9, p. 18.
Finds Air Conditioning Sales Come Through Service, So Detroit Contractor Shifts Promotion Aim. May 23, p. 15.
Oklahoma Cafe Changes Air Under Wooden Floor to Stop Buckling. June 6, p. 7.
Carrier Absorption Unit Installed to Air Condition Oklahoma Building. June 6, p. 8.
Glycol Vaporizer Gets Newark Contractor the Job Despite Lower Bids. June 6, p. 8.
Dayton Hotel Tucks 3-Ton Air Conditioner in Clothes Closet, Replaces Air Distributor Head with Short Insulated Duct. June 6, p. 28.
17½-Ton Capacity in Two Systems Handles Varying Heat Loads in Denver V.F.W. Post. June 6, p. 28.
Novel Plenum Chamber Placement Saves Space, Offers Smoother Air Flow in St. Louis Department Store. June 20, p. 6.
St. Louis Sporting Goods Store Makes Air Cooling System a 'Show Piece.' June 20, p. 12.
Cartoon—Burning Question: What Good Is a Heat Wave? July 4, p. 1.
Box Plenum Test—Right Entrance Section Design Cuts Pressure Loss. July 18, p. 15.
Playhouse Director Uses Same Unit To Cool Audience in Summer, Store Apples in Winter. Aug. 8, p. 8.

Restaurant Cooling Installation Permits 50% Load Reduction Without Any Appreciable Lag. Aug. 8, p. 26.
Restaurateur Declares 'Air Conditioning Is One of Best Methods of Increasing Volume.' Aug. 15, p. 1.
Air Conditioning Hospitals—Cooler Operating Rooms, Patients Quarters Needed To Insure Comfort, Doctor Says. Aug. 22, p. 1.
Zoning Helps Cut Cooling Costs—11 Coil Fan Locations Effect 25% Saving for Remote System. Aug. 22, p. 15.
Funeral Home Needs High Peak Capacity and Low Noise Level. Aug. 22, p. 16.
Air Cooling Abroad—Overseas Contractor Must Meet Local Problems of Conserving, Treating Condensing Water in Order To Sell Installation. Aug. 22, p. 23.
'Climate Room' for Hospital Will Aid in Childbirth. Sept. 5, p. 1.
Chinchillas Won't Breed When It's Hot, So Rancher Provides Air Conditioning. Sept. 5, p. 10.
Air Conditioning Proves Its 'Drawing' Power, Other Advantages, to Omaha U. Sept. 5, p. 19.
Varied Locations for Outlets and 'Spot' Controls Solve Cooling Problem in All-Glass Lounge Bar. Sept. 5, p. 20.
Air Conditioned for 20 Years, Market Puts in New Direct Expansion System. Sept. 5, p. 22.
Cost-Savings of Air Conditioning Convince Eastern Supermarkets. Sept. 12, p. 12.
Cooling Outlets Located to Permit Later Sub-Division of Offices. Sept. 19, p. 20.
Fur Dealer Wins Goodwill by Cooling Stuffy Fitting Rooms for Customers. Sept. 26, p. 15.
Large Bowling Alley Installation Features Flexibility with 2-Zone Control System. Oct. 3, p. 21.
Department Store's Air Conditioning System Fits into Functional Design. Oct. 10, p. 18.
Concealing, Camouflaging Ductwork in College Buildings Designed by Frank Lloyd Wright Proves Tough Problem for Florida Firm. Oct. 17, p. 45.
500 Window-Type Air Conditioners Placed in G-M Building To Stay There. Nov. 14, p. 57.
'Vestibule' Location, Artesian Water Cooling Enable 3-Hp. Unit To Cool 5,000-Coat Vault. Nov. 14, p. 52.
Textile Mills Lead Industry in Accepting Air Conditioning Because Ideal Atmosphere Is Vital. Dec. 19, p. 17.

AIR CONDITIONING, INDUSTRIAL

Air Conditioning in Western Electric Plant in Allentown, Pa., Makes Possible Critical Precision Processes. March 7, p. 21.
Textile Mills Seen Using Air Cooling Within 15 Years. March 7, p. 27.
Factors in Determining Optimum Conditions for Industrial Workers by P. L. Davidson. April 18, p. 22.
Television Offers New Market and New Problems for Air Conditioning; Cooling System for TV Studio Must Handle Heavy, Sudden Loads at Low Noise Level. April 18, p. 25.
Textile Mill Air Conditioning System Uses Spray Pond Instead of Cooling Tower. May 16, p. 20.
Special Heat Exchange Method of Brewery May Find Use in Other Types of Applications. Dec. 5, p. 21.

AIR CONDITIONING, RESIDENTIAL

Utility Advises Room Coolers ¾ Hp. or Up Be Installed for Single Phase, 220 Volts. March 28, p. 4.
Washington Air Conditioning Dealer Thrives on Cold Canvassing, Simplified 'Sales Book.' April 4, p. 30.
Photos of Previous Jobs Helps Missouri Dealer Sell Wealthy Home Owner on Installing Air Conditioning. April 18, p. 12.
Direct Mail Drive, Fair Service Prices, Brand Promotion, Initiative Produce Bonanza Air Conditioning Volume for Kalamazoo Concern. Aug. 29, p. 10.

AIR CONDITIONING, TRANSPORTATION

Air Conditioning Planned for Tomorrow's Super-Bus. Feb. 28, p. 9.
Refrigeration and Air Conditioning for Towboat Presents Some Special Problems. Feb. 28, p. 17.
New I-C All Electric Dining Car Features 9 Refrigeration Units, Air Cooling Systems. March 28, p. 23.
First Complete Air Conditioned Plane Has 10-Ton System Made of Aluminum. April 11, p. 25.
U. S. Navy Studies Stress Advantages of Air Conditioned Ships in Tropics. Aug. 1, p. 18.
Lighter Apparatus for Cooling Planes on Ground May Be Used by Air Force. Aug. 29, p. 16.
Auto Unit 'Stabilizer' Holds Even Evaporator Temp., Low Head Pressure. Oct. 24, p. 12.

AIR CONDITIONING, GENERAL

Pictures Tell Story of Widespread Market for Room Air Conditioners. Jan. 3, p. 24.
Tests Show Body Suffers No Ill Effects from Sudden Air Temperature Changes. Feb. 7, p. 1.
Simple, Accurate Method of Balancing Multiple Air Supply Outlets Explained. Feb. 13, p. 23.
High Velocity Air Distribution System Finds Favor When Space for Equipment Is Limited. April 11, p. 6.
Chicago Dealer Changes Timing of Room Cooler Ads To Meet Altered Market Conditions. April 18, p. 8.
Use of More Accurate Method To Estimate Cooling Load Is Urged by Veteran Engineers. April 18, p. 28.
Nashville Contractor Profits from Selling Prospect Only Air Cooling Installation He Can Afford. April 18, p. 32.
Evaporative Condenser Can Conserve 95% of Water Used by Water-Cooled Systems. May 16, p. 19.
Promoting Wider Use of Air Conditioning Seen Providing Expanded Market for Labor. May 23, p. 2.
Popular Method of Figuring Cooling Load Is Inaccurate, Cornell Professors Claim. July 4, p. 5.
No Limit To Window Air Conditioner Market for Hustling Dealer, Says Bratten, Listing Prospects and Ways To Make Them Buy. July 25, p. 13.
Credit Analysis of Contractor's Customers—Make a Check of Financial Condition Before Installation Is Made, Advises Dun & Bradstreet Representative. July 25, p. 15.
Intelligent, Ethical Handling of Room Cooler Promotions Demands 'Special' Type of Dealer. July 25, p. 25.
Stainless Steel Ductwork Demonstrator Unit Worth 10,000 Sales Words to A. C. Dealer. Aug. 1, p. 6.
Test Promotions Before Splurge Helps Dealer Spend Advertising Money Wisely. Sept. 5, p. 5.
St. Louis Utility Publishes Monthly Report on Local Air Conditioning Jobs. Sept. 12, p. 22.
Exhaust Fans Just Under Store's Ceiling Break Up Cold Air Pockets There. Sept. 12, p. 22.
'Magic Dial' System Controls Cooling, Heating, Ventilation for Single Switch. Sept. 12, p. 28.
Window with Heat-Absorbing Plate Glass Cut Cooling Load, Tests Show. Sept. 19, p. 20.
9 Check-Points Facilitate Figuring of Room's Heat Load, Selecting Proper Unit. Oct. 17, p. 63.
Question of Acoustic Control—No Means for Measuring Sound Levels in an Air Stream Has Been Developed. Nov. 7, p. 17.
Engineers Should Take Lead in Determining Kind of Air for Healthful Living. Nov. 14, p. 43.
Using Water as Heat Transfer Medium Offers Many Benefits in Year-Round Air Conditioning. Nov. 21, p. 5.
Use of Chilled Water in Central Systems Permits Flexibility, Says ASRE Speaker. Nov. 28, p. 9.
N. Y. May Require Water Savers on All Installations. Dec. 19, p. 1.
Water Shortages May Make Refrigeration and Air Conditioning Targets for Restriction. Dec. 19, p. 13.

AIR CONDITIONING, HEAT PUMPS

Heat Pump Folder Tells Expansion Possibilities. Feb. 14, p. 8.
Heat Pump Installed in Kansas City Restaurant Draws 5,000 Gals. per Day from Water Main. March 14, p. 8.
Heat from Ground Warms Alfred, N. Y. House Cheaply, But Cost of Installation Is High. March 14, p. 12.
Engineers Tell How To Convert Milk Cooler to a Heat Pump for Warming Milk House. April 25, p. 6.
Rossville, Ga., Heat Pump Places Source Coil Below Surface of Lake. April 25, p. 18.
Heat Pump Progress—Data on Actual Operating Costs and Factors in Installation Practices by Guy C. Hall. May 30, p. 24.
Considerations in Selecting Sources of Heat and Other Factors in Heat Pump Installation by A. Hanson. May 30, p. 25.
ASHVE Papers Furnish Data on Heat Pump Research Products. July 4, p. 20.
Heat Pump Installation Warms 12-Story Oregon Building for Half of Coal Cost and Attains Fantastic C. O. P. of 22.6. ASHVE Hears. Aug. 1, p. 5.
'Controlling the Heat Pump.' Aug. 15, p. 17.

Heat Pump Book Gives Data on European Installations. Aug. 29, p. 20.
Inventor of Heat Pump for Cold Climate Describes Its Development, Performance. Sept. 19, p. 22.
Diesel Heat Pump Provides Conditioning, Hot Water for Village Shopping Center. Oct. 24, p. 7.
Successful Operation of Heat Pump Shows Possibilities for Cold Climates—'Earth Recharging System' Praised in Owner's Report of First-Year Experience.
Selling Air Conditioning—In Addition to Merchandising Experience, Closing Sale Requires Keen Understanding of Codes, Water Problems, and Wiring. Nov. 28, p. 18.
Big Market for Heat Pumps Seen in Southeast If Utilities Get Behind Promotional Program. Dec. 12, p. 26.

AIR CONDITIONING, STATISTICS

Postwar Record of Appliance, Air Conditioning, and Commercial Refrigeration Sales in Houston. Feb. 28, p. 11.
60% Jump in Sales Chalked Up in Detroit 2 Years in a Row. April 18, p. 18.
1,521 Air Cooling Jobs Installed in New York in 1948. May 2, p. 5.
Producers of Electronic Precipitators Predict that 1949 Sales Will Exceed Number of Installations in 1948. May 23, p. 24.
Air Conditioning Equipment Sales Jump in 1948. July 25, p. 1.
Condensing Unit Sales Decreased Slightly in '48, U. S. Figures Say; Gains Shown in Air Conditioning. July 25, p. 26.
Air Conditioning, Commercial Refrigeration Shipments 1940-1948 from Figures Collected by the U. S. Bureau of the Census. July 25, p. 26.
First Reports of 1949 Chicago Commercial, Air Conditioning Installations Indicate Total May Exceed Last Year's Mark. Oct. 17, p. 18.
6 Months Sales in Commercial Gain in Detroit—Permits Show Nearly 20% Increase in Commercial Units & Air Conditioning. Aug. 8, p. 1.

Commercial

COMMERCIAL REFRIGERATION

Necessity for Refrigeration in Processing, Storing, and Delivering Dairy Products Cited. Jan. 10, p. 20.
San Diego Contractor Solves Guarantee Problem: 90-Day Free Service and 1 Year Parts Replacement Explained on Printed Form which Eliminates Most Misunderstandings. Jan. 17, p. 24.
Facts To Help Refrigerated Warehousemen Store Record Peanut Crop. Jan. 24, p. 19.
Cleveland Wholesaler Adopts 'Supermarket' Methods to His Field; Product Display Selling Plus Alert Countermeasures Increased Parts Sales. Jan. 24, p. 20.
Marine Refrigeration Demands Compactness with Flexible Capacity by S. W. Brown. Jan. 24, p. 22.
Cleveland Wholesaler Services Dealers with Near-Complete Inventory of Parts by Covering Territory in Special Panel Truck. Feb. 21, p. 15.
Mass Reconditioning; Tearing Down 2,600 Used Refrigerators To Meet Army Contract Calls for Thorough Parts Check Up, Multiple Replacements. Feb. 21, p. 21.
Use of Ammonia Recirculating Systems in Freezing Room Outlined by Patterson. Feb. 21, p. 22.
Specially Devised Sheet Provides Continual Check on Purchases, Sales, Turnover. Feb. 28, p. 8.
New Grand Rapids Commercial Installation Fees Are Keyed to Unit's Horsepower. March 14, p. 16.
New Orleans Commercial Dealer's 'Graduated' Bonus Setup Keeps Staff Alert for Sales Possibilities. March 14, p. 18.
Test at Lehigh U. Shows Optimum Exchange of Heat Occurs When Finned Tubing Is Utilized. March 14, p. 35.
Whether Job Calls for Prime Surface or Finned Coils Depends on Temperature Difference, Quantity of Air, Defrost Period. March 21, p. 16.
Shelby-Skipwith Partner Recalls Sale of First Ice Machine to Fish Dealer After Working All Night on Trial Run. March 21, p. 17.
Research Shows Capacities of Commercial Cases in Terms of Actual Merchandise. March 28, p. 11.
Gaskets Racked on Series of Sliding Panels Save California Wholesaler Time and Space. March 28, p. 15.
Model Store Layout Helps Minneapolis Commercial Firm Sell Clients. April 4, p. 18.
New River Barge Flouts Tradition, Takes on Women. May 2, p. 25.
Spence Outlines Correct Operating Principles for Self-Service Display Cases and Describes Accessories and Defrost Systems. May 2, p. 30.
Tekni-Craft Arms Ice Cream Freezer Salesmen by Explaining Scope of Market, How To Convince Prospects of Profit Possibilities. May 2, p. 32.
Morristown, N. J. Distributor Uses 75-Minute Radio Program To Sell Public on Doing Business with Regular Commercial Refrigeration Dealers. June 6, p. 12.
Special Discount During Week-End 'Open House' Draws Visitors to New Massachusetts Commercial Firm. June 20, p. 15.
Sales 'Just Come In' for Indianapolis Dealer Who Doesn't Exaggerate, Gives Service After Warranty. June 27, p. 17.
Handling Bar, Restaurant, and Institutional Equipment Offers Many Opportunities for Commercial Refrigeration Distributor in Peoria. June 27, p. 18.
Profits in Ice Cream—Surveys Provide Ammunition for Those Selling a Program of Ice Cream Merchandising to Drug and Grocery Stores. Aug. 8, p. 22.
Restaurant Assn. Reports Savings Up to \$100 from Using Ice Cube Makers. Aug. 8, p. 13.
Commercial Equipment Loaded on Trailer, Peddled in Country Doesn't Come Back. Aug. 8, p. 24.
Variety of Services Bring Community Refrigeration Centers More Business. Sept. 12, p. 23.
Portable Dictating Equipment Enables a Salesman To Make Report Quickly. Sept. 26, p. 5.
Photographic Selling—With Camera Commercial Dealer Collects Pictures of Installations, Manufacturing Processes To Convince Doubtful Prospects. Sept. 26, p. 14.
Direct-Mail Piece. Showing Prospects

What Their Competitors Have Done Commands Immediate Attention, Has Solid Sales Punch. Oct. 3, p. 15.
Commercial Firm's Year-End 'Adjustment' Bonus for Salesmen Is Keyed to Profits. Oct. 10, p. 11.
'Job Procedure Chart' Proves Helpful to Refrigeration Contractor's Operation—Can Tell at Glance Where a Job Stands. Oct. 17, p. 14.
Refrigerated Corn—Husked and Packaged Where Grown, Corn Retains High Sugar Content If Kept at Low Temperature. Oct. 17, p. 30.
New Toledo Supermarket Uses Special 'Caps' on Frozen Food Cases To Aid Defrosting. Oct. 17, p. 30.
Carbonators—Complete Understanding of Their Operating Principles Will Help Refrigeration Men Make Proper Applications. Oct. 17, p. 58.
Increasing Evaporator Surface in Farm Refrigerator Reduces Operating Cost. Oct. 31, p. 2.
Time-Tested Specialty Selling Technique Are Boon to Newcomer in Commercial Field. Nov. 14, p. 26.
Dealer's System for Figuring Allowance Gives Salesman Share in Firm's Profit or Loss. Nov. 14, p. 30.
Low Cost Distribution Comes Through Higher Efficiency, Not Penny Pinching. Nov. 14, p. 32.
'Performance Guarantee' Proves Key Factor in Securing Competitive Bids for Contractor. Nov. 14, p. 40.
Meter Plan Payments—Carefully Worked Out Forms and Collection System Makes This Method Effective in Selling Display Cases. Nov. 21, p. 12.
Planning Complete Installation Is Key to Added Sales in Restaurant Equipment Field. Nov. 28, p. 15.
Grocery Equipment Layout—Answers to Typical Questions Furnish Tips on How Fixtures Can Be Arranged for Effective Retail Selling. Dec. 5, p. 13.
Experiments Show that Controlling Temperature of Blood Right After Freezing Minimizes Breakdown of Cell Structure. Dec. 12, p. 7.
Services of U. L. in Refrigeration and Air Conditioning Fields Outlined: 5 Types of Equipment, Including Display Cases, Now Being Tested. Dec. 12, p. 13.
When Figuring Job Commercial Firm Protects Itself by Billing Prospect 5% for Planning. Dec. 17, p. 17.
After Storing Fruit for Better Price, Farmer Uses Added Profits To Pay for Refrigeration. Dec. 12, p. 25.

COMMERCIAL REFRIGERATION, STATISTICS

Reports on Commercial Refrigeration Equipment, Parts Wholesalers' Sales and Inventories: Jan. 17, p. 2; Feb. 28, p. 2; April 25, p. 9; May 16, p. 2; June 20, p. 2.
Commercial Refrigerator Dealers' Operating Experience in Postwar Year; Study Shows Up Deficiencies in Dealer's Accounting and Record Keeping. Feb. 7, p. 28.
Postwar Record of Appliance, Air Conditioning, Commercial Refrigeration Sales in Houston. Feb. 28, p. 11.
1,987 Commercial Installations in Detroit During 1948 Reflect Heavy Selling Effort. May 16, p. 24.
Wholesalers of Equipment Note Sales Up 16% July 11, p. 1.
Air Conditioning Equipment Sales Jump in 1948. July 25, p. 1.
Condensing Unit Sales Decreased Slightly in '48, U. S. Figures Say; Gains Shown in Air Conditioning. July 25, p. 26.
Air Conditioning, Commercial Refrigeration Shipments 1940-1948 from Figures Collected by the U. S. Bureau of the Census. July 25, p. 26.
6 Months Sales in Commercial Gain in Detroit—Permits Show Nearly 20% Increase in Commercial Units & Air Conditioning. Aug. 8, p. 1.
June Refrigeration Parts, Equipment Sales Up 14%. Aug. 15, p. 2.
Wholesaler Reports Show Sept. Appliance Sales Up, Refrigeration Parts Down. Nov. 14, p. 39.
Commercial Refrigeration Field Has Need of Statistics for Sales, Production Estimates. Nov. 14, p. 75.

Home Freezers

FROZEN FOODS, FREEZERS

Slow Freezing Makes Little Difference in Taste, Vitamin Content of Vegetables, Tests Indicate. Jan. 3, p. 7.
Tests Show Low Temperature Storage for Frozen Pork Is Better, But Question of 'How Low Is Practical?' Remain Unanswered. Jan. 3, p. 9.
Though 0° Seems Best for Storing Most Items, No Universal Temp. Has Been Found. Jan. 10, p. 11.
Proper Freezing, Low-Temp. Storage of Meat Shown To Have Effect on Taste. Jan. 10, p. 19.
Commercially Packaging Frozen Fish So as To Eliminate Odors and Yet Avoid Dehydration Presents Tough Problem. Jan. 17, p. 16.
Foods Packed at -140° and Shipped in Special Containers Are Claimed To Hold 0° for up to 40 Days. Feb. 7, p. 6.
Dept. of Agriculture Recommends Priorities for New York in Cold Storage Field in '50. Feb. 7, p. 27.
'Canvass' Truck Carries Freezers Right to Farmer's Door, Nets Dealer Many Sales. Feb. 21, p. 25.
Freezer Club Offers Its Members Food Savings. Feb. 28, p. 1.
N. Y. State Locker Operator Is Diversification Personified: Offers Storage, Processing, Frozen Foods, and Appliances. Feb. 28, p. 7.
Freezing Eggs When Cheap for Use Later Is Simple. Feb. 28, p. 7.
Pastry Baking Contest Is First Step in Promotion Which Sold 18 Freezers. March 28, p. 18.
New Freezing Process May Avert Large Annual Loss Suffered by Fruit Growers. April 4, p. 6.
Dealer's Continuous School on Home Freezing, Steady Promotion Sells 100 Freezers a Year. April 11, p. 8.
Growth of Home, Farm Freezer Amazing Despite Industry Neglect, Duggan Says. April 18, p. 21.
Easy-to-Understand Style in Home Freezer Demonstration Is Effective Sales Clincher. April 25, p. 12.
Co-op Turkey Freezing Plant Installs 400 Lockers To Draw Off-Season Trade. May 30, p. 15.

(Continued on next page)

SCHNACKE COMPRESSORS AND CONDENSING UNITS with THERMATROL

- maintains
EVEN
Evaporator
Temperature

Thermatrol is the most efficient, least expensive and simplest type of capacity control available. Reduces in a gradual curve—not in steps, and eliminates unnecessary cycling.

Schnacke advance engineered compressors feature refrigerant cooled, replaceable cylinder sleeves, balanced forged crankshafts, positive forced feed lubrication, efficient suction and discharge valves, insert automotive type bearings, etc. High efficiency and trouble-free operation with little vibration assure satisfaction. Thousands of

discriminating engineers and users the world over are convinced of Schnacke quality through proven performance.

Schnacke Compressor Units range from 5 H.P. to 50 H.P., and Condensing Units from 5 H.P. to 25 H.P. Write for further information.

1016 E. COLUMBIA ST.

SCHNACKE, INC.

EVANSVILLE, IND.

Guide to 1949 News Stories--

(Continued from preceding page)

Utilities' Promotion of Freezer Can Build Steady Line Load and Give Public a Better Way of Life. June 13, p. 6.

Institute Recommends Simplified Packaging for 2-Week Freezing. June 13, p. 14.

What Freezer Will Do for Homemaker, Ease of Use, and Savings Should Be Basic Appeals in Merchandiser's Sales Promotion. June 13, p. 22.

Freezer Packaging Guide: G-E Consumers Institute Compiles Data on Materials for Wrapping All Kinds of Foods. June 13, p. 39.

Testimonials: Dealer Collects 'em from Freezer Users To Help Make the Next Sale. June 13, p. 42.

Frozen Turkey: Missouri Farm Finds Flavor Is Best, Texture Less 'Rubbery' When Fowl Is Chilled to 28-30° F. June 13, p. 44.

58 Makes Included in Presentation of Product Information. (Home Freezer Specifications Issue.) June 13.

U. S. Grading Standards for Frozen Orange Juice Take Effect July 24. July 4, p. 2.

Frozen Food Dealers Need More Help from Manufacturers and Distributors in Order To Handle Freezers, Woman Operator Feels. July 11, p. 13.

Users Help To Sell Record Volume of Home & Farm Freezers as Manufacturer-Dealer & Promotion Exploits Customer Reaction. July 25, p. 8.

Frozen Food Packers Say Sales Are Slowed by Inadequate Retail Cabinets. Aug. 8, p. 1.

Suburban Operator Sells Idea of Locker Rental Plus Purchase of Small Freezer. Aug. 8, p. 15.

8-Page Freezer Supplement Has Variety of Appeals in Articles, Advertisements. Aug. 15, p. 8.

Dealer Keeps Books for Freezer Customers To Show Their Food Savings, Help Convince Other Prospects. Sept. 5, p. 7.

User Survey Finds Operating Cost of Freezer Is Minor, Power Consumption per Cu. Ft. Falls as Size Increases, Location Unimportant. Sept. 12, p. 5.

Frozen Foods Really Rolling, Says Packer Who Advises Lockermen How To Cash In. Sept. 12, p. 15.

'Look' Tells Mothers How Freezer Solves School Lunch Problem. Sept. 19, p. 2.

Frozen Food Sales Drive To Emphasize Home Freezer Savings—Distributors Offer Frozen Food at Discount in October. Oct. 10, p. 9.

Hustling Small-Town Dealer Tells How 2-Week Freezer Promotion Grossed \$10,000. Nov. 7, p. 11.

Food Spoilage—To Complete Stop It, Freezer Mfrs. Must Seek Ways To Control Enzyme Action, ASRE Speaker Says. Nov. 7, p. 16.

FREEZER STATISTICS

NEMA Freezer Sales Drop 29% in November. Feb. 7, p. 1.

NEMA '48 Freezer Sales Hit Total of 450,550. March 14, p. 1.

34-City Survey Indicates Over 50% of Families in All Income Groups Buy Frozen Foods Regularly. March 14, p. 14.

Jan. Freezer Sales Up 30% from Dec. March 28, p. 1.

Georgia U. Issues Data on Dairy Storage Temperature. April 18, p. 17.

NEMA Freezer Sales Drop 11% for Feb. April 25, p. 1.

Freezer Sales Gain 12% During March. May 30, p. 1.

21,441 Units Sold in April Falls Below March Total. July 4, p. 25.

Volume of Home Freezers Sold in May Reflect a Decrease of 6%. Aug. 1, p. 4.

June Freezer Sales Bring NEMA 6 Mos. Total to Nearly 148,000. Aug. 22, p. 25.

NEMA Firms Sell 30,988 Freezers During July. Oct. 17, p. 16.

NEMA Freezer Sales Total 214,336 for 8 Months with 35,384 Units Sold in August. Oct. 31, p. 4.

Kelvinator Home Freezer Survey Shows Average Urban or Rural User Saves \$12-\$17 Every Month. Nov. 7, p. 6.

Foreign Volume Aids Sept. Freezer Sales. Dec. 12, p. 1.

Appliances REFRIGERATORS

Product Knowledge: There's Plenty To Tell the Old Refrigerator User Who Hasn't Kept Pace with Today's Developments. Feb. 28, p. 12.

The Trade-In Problem. March 28, p. 8.

Standardized Pricing, Reconditioning Costs Are Keys to Profitable Handling of Trade-Ins. March 28, p. 8.

The Trade-In Problem (Continued). May 2, p. 12.

Refrigerator 'Sweats' in This Weather, Too, But There Are Ways To Combat It. July 11, p. 11.

The Trade-In Problem (Cont.). July 18, p. 11.

Book Lists Refrigerated Heat Storage Periods. Aug. 15, p. 5.

Meters Move Merchandise for Dealers Who Know How To Set Up a Campaign. Aug. 22, p. 6.

OTHER APPLIANCES

New Home Construction, Replacing of Old Models Offers Big Refrigeration Market. Jan. 17, p. 5.

Denver Store Has Customers Fill Out

'Didn't Have' Slips With Good Results. Feb. 21, p. 8.

'John and Mary' Use Plain Business Arithmetic To Figure Cost of Keeping Their Small Appliance Store Doors Open. March 28, p. 13.

Home Service Guild Organizes To Solicit Work Orders for Smaller Service Firms. April 4, p. 31.

Handle Few Appliance Brands by Manufacturers Who Will Work with You. Dept. Stores Told. July 11, p. 19.

Meter Sales Plan Promoters Report They Are Reaching New Income Class. Aug. 15, p. 1.

PX Stores Limited to \$15 Appliance Items. Aug. 15, p. 1.

Excess Productive Capacity Seen Brewing Bitter Battle in Appliance Industry. Oct. 24, p. 1.

Today's Productive Capacity Held Ample To Take Care of Expanded Demand of 1960. Oct. 24, p. 2.

Wider Use of Open-End Mortgage Is Termed Key To Financing Appliance Purchases, Remodeling Among Owners of Older Homes. Nov. 28, p. 7.

DEALER-DISTRIBUTOR OPERATIONS

'Putting Customers Through School' Gets Results in Selling Complete Kitchens—Jan. 3, p. 8.

Showmanship, Service Build \$50,000 Volume for Dealership Located in Remodeled Barn—Jan. 3, p. 23.

Denver Appliance Dealer Succeeds By Teaming Up With Merchandising Plumber, Instead of Competing With Him—Jan. 24, p. 23.

With Repair Calls Taking Servicemen Up to 120 Miles from Store, Dealer Trains Crew To Double as Salesmen—Feb. 14, p. 14.

Reconditioning: Tennessee Concern 'Reconditioners' Refrigerators for Dealers, 'Refinishes' Cabinets for the Public—Feb. 14, p. 26.

Callaway Declares Pre-War Veterans Should Teach Young Appliance Salesmen Old Tricks—Feb. 21, p. 10.

Successful Suburban Appliance Dealer Pays Overhead from Service Shop Operations—Feb. 21, p. 26.

Dealer Uses Single Appliance as 'Springboard' for Customer's Plunge Into Complete Kitchen—Mar. 7, p. 8.

Forms Filled Out by Visitors Provide Prospect Information for Outside Men—Mar. 14, p. 26.

Dealership Starts Its Sales Training, When Man Is First Selected—Mar. 21, p. 12.

Tag Itemizing Work Done Proves Strong 'Convincer' in Used Refrigerator Sales—Mar. 21, p. 23.

Low Overhead Spot for Reconditioning Shop Helps Firm Make 30% Profit on Trade-Ins—April 4, p. 23.

Good Management of Both New Refrigerator Sale and Trade-In Transaction Earns Salesman Bigger Return Under Store's Plan—May 2, p. 2.

Revolving Merry-Go-Round Display of Appliances, Air Cooling Equipment Proves Customers Buy Once Interest Is Aroused—May 2, p. 6.

Action-Packed Window, Profit Plan for Salesmen Boom Business for Dealer—May 9, p. 6.

Newspaper Ads, Direct Mail, Phone Calls Sell Dealer's Custom-Built Kitchen Service—May 9, p. 8.

Price Protection Results in Customer Confidence—June 6, p. 2.

Distributor's Freezer Trade-In Plan Includes Rebuilding Old Models for Dealers To Resell at Cost, Making Full Profit on New Sales—June 13, p. 34.

Sales Resistance: Success of Contest Among 4 Stores Shows Salesmen Harbor Most of It—June 20, p. 5.

Cincinnati's Beat Path to Dealer's Stores for Chance To Unscramble, Unlock Refrigerators—June 20, p. 9.

Dealer Lets Customer Apply Price of Used Refrigerator on Any Other Purchase If Old Box Is Not Satisfactory—June 27, p. 8.

Collection Stickers on Bills to Overdue Accounts Bring Payments, Goodwill—July 18, p. 23.

New Twist to Old Promotion, Parts Counter Prove Profitable for One Appliance Dealer—July 25, p. 2.

Dealer Tells How He Conducted Quota-Topping Contests for Sales, Service Personnel—Aug. 8, p. 10.

Penny Postcard 'Bombardments' Give Greatest Return for Advertising Dollar, Dealer Contents—Aug. 8, p. 17.

Public Seeks Quality, Not Price Cuts, Kalamazoo Dealer Finds—Aug. 15, p. 20.

Freezers Average One a Day as Result of Promoting Rentals Instead of Sales—Aug. 22, p. 18.

Black Eye for Appliance Industry Feared If Cut-Throat Practices at Retail Level Continue—Aug. 29, p. 9.

Postwar Dealer Finds Hoary 'Pitches' Still Sell—Sept. 19, p. 10.

Providing 'Live Leads' for Outside Salesmen Boosts Ratio of Sales to Number of Calls—Sept. 26, p. 8.

Complete Stock Classification System Enables Retailer To Spot 'Slow Moving' Items, Maintain Inventory, Check on Salesmen—Oct. 10, p. 8.

Straight Basic Selling Without Any Gimmicks or Premium Spells Success for Illinois Dealer—Oct. 10, p. 10.

5-Year Records Tell Firm Which Days Are Best To Advertise Appliances—Nov. 14, p. 10.

Protection in Territory Offers Most Incentive to Salesmen, Dealer Finds—Nov. 14, p. 63.

Five Christmas Promotions—Dec. 5, p. 6.

Salesmen Share Profit Rather Than Earn Commission—It Works Like a Charm—Dec. 12, p. 10.

Trade-In Refrigerator Bulletin Board Eliminates Need for Reconditioning Shop—Dec. 12, p. 20.

Installment Payments Cleared Up on Time Net Special Discounts—Dec. 19, p. 10.

APPLIANCE STATISTICS

Big Models Push NEMA Oct. Sales Up 11%—Jan. 3, p. 1.

Chattanooga Appliance Sales for 12-Mo. Period Set \$10,000,000 Record—Jan. 10, p. 2.

Appliance Dealer's Nov. Sales Fall Below 1947—Jan. 24, p. 13.

8-Cu. Ft. Models Pace NEMA Sales During November—Jan. 31, p. 1.

Chattanooga Freezer Volume Shows 46%

Monthly Gain as Sales of Refrigerators Drop Off 7.5%—Feb. 7, p. 2.

Household Dealer Sales Reported 5% Over '47—Feb. 21, p. 26.

Cumulative Record of World Sales of Electric Refrigerators with Exports, Retirements, and Market Saturation—Feb. 28, p. 1.

Household Unit Sales in 1948 Hit 4,810,000—Feb. 28, p. 1.

Appliance Wholesalers' Sales Up 7% for 1948; Commercial Volume Drops—Feb. 28, p. 2.

Refrigerators Account for One Third of Knoxville Dealer '48 Sales To Push Volume over \$1 Million—Mar. 7, p. 5.

\$50 Million Spent in TVA Area for 4 Appliances—Mar. 14, p. 29.

NEMA Refrigerator Sales by States for '48—Mar. 14, p. 33.

For those desiring to purchase back copies, the NEWS has a limited supply of the following issues on hand: Jan. 17, 31; Feb. 7; March 7, 21; April 11; May 2, 9, 16; June 6; July 4, 18; Aug. 8, 15, 22, 29; Sept. 5, 12, 19, 26; Oct. 3, 24, 31; Nov. 7, 14; Dec. 19.

Utility Releases Data on Reconditioning Cost—Mar. 21, p. 25.

NEMA Refrigerator Sales Pass '48 Mark—May 16, p. 1.

April Excise Collections Rise for Air Conditioners, Household Refrigerators—June 13, p. 8.

NEMA Household Sales in April Total 335,092—June 20, p. 1.

Voltage Ratings Issued by EEI Committee Cover Some Household Appliances and Motors—June 27, p. 16.

Wholesalers of Equipment Note Sales Up 16% in May (Appliance Wholesalers)—July 11, p. 1.

341,933 Household Refrigerators Sold in May by 12 Companies—July 25, p. 4.

Household Refrigerator Sales Set Mark for 6 Mos.—Aug. 15, p. 1.

June Refrigeration Parts, Equipment Sales Up 14% (Appliance Wholesalers)—Aug. 15, p. 2.

Sales of Appliance Wholesalers Drop During July—Sept. 12, p. 4.

July Refrigerator Sales Up 5% Over June—Oct. 10, p. 1.

Appliance Wholesalers Up Volume in August—Oct. 17, p. 8.

NEMA August Refrigerator Sales at 314,839—Oct. 24, p. 17.

Wholesalers Report Appliance Sales Up in Sept.—Nov. 14, p. 39.

Refrigerator Sales Pass 3,000,000 Mark in Oct.—Dec. 5, p. 1.

Wholesale Sales of Appliances Rise in Oct.—Dec. 12, p. 9.

Industrial

Shelby-Skipwith Partner Recalls Sale of First Ice Machine to Fish Dealer After Working All Night on Trial Run—Mar. 21, p. 17.

How 'Lo-Temp Evaporator' System Aids in Frozen Orange Juice Production—Mar. 21, p. 18.

Blood Fractionation: Special Controls Make Process Possible. July 11, p. 28.

Low-Temp. Cabinet Helps English Plant Process Wooden Propellers. Sept. 12, p. 13.

Laws, Codes

UL Requirements on Receivers and Relief Devices Are Changed. Jan. 10, p. 1.

Unfair, Illegal Trade Tactics Outlined. Feb. 14, p. 9.

N. Y. Court Rules on Cut Prices on 'Floor Models.' Feb. 28, p. 2.

Does Fair Trade Law Help Dealers: No—Anti-Trust Head Says It Hurts Dealer Inventories; Court Rules Law Applies to All Dealers Even If No Price Contract Exists. Yes—Michigan Bill Would Levy Fines of \$50 to \$10,000. March 7, p. 29.

FTC Says Price Cuts in Good Faith To Meet Competition Are Not Illegal. March 14, p. 29.

Florida Court Kills Bill Permitting Manufacturer To Force 'Contract' Price on All Dealers. April 18, p. 44. See also May 2, p. 10; May 23, p. 28; May 30, p. 5; June 6, p. 4.

Curbing Dealer Operations Violates Anti-Trust Law, 2 Texas Suits Charge. April 25, p. 11.

Intelligent Administration of Safety Codes Stressed as Important Factor for Success by John C. Rehard. April 25, p. 22.

Text of Administration Section of Detroit Municipal Code by John C. Rehard. April 25, p. 23.

Ice Cream Firm in Los Angeles Fined \$5,000 for 'Kick Backs.' May 2, p. 1.

Ice Tray Patents Owned by Gits Molding and Republic Molding Declared Invalid. May 2, p. 7.

Legislature in South Carolina Kills Textile Air Conditioning Bill. May 16, p. 2. See also Feb. 21, p. 2; March 21, p. 10; April 25, p. 9; May 2, p. 9.

Minnesota Court Curbs Power of Mfr. To Set Minimum Resale Price. May 23, p. 2.

Nebraska Law Prohibits Liquor Dealers from Accepting Free Fixtures. May 23, p. 8.

Offering Customer Choice of Pricing Method Termed 'Safe' for Manufacturer. May 23, p. 17.

NLRB Rules Against Collective Bargaining by Assn. of Employers. May 23, p. 25.

Detroit Ordinance Hits Defacing of Serial Numbers. May 30, p. 1.

Probe Hits Navy Store 'Underselling.' June 6, p. 1; June 13, p. 1.

Proposed Test Case To Determine Status of Salesmen Working Under Contract. June 6, p. 9. See also June 13, p. 2.

Fair Trade Laws Seen Aiding Competition, Restricting Monopoly. June 20, p. 2.

Guarantees: More Care Needed in Word- ing Them, Bureau Advises. July 25, p. 7.

New York Clarifies Legal Stand on Service Agreements. Sep. 9, p. 1.

'Exclusive Dealing'—Tying Contracts— Their Illegality Depends on How Much Competition Is Injured by Such Practices. Nov. 28, p. 23.

Locker Plants

Chicago Basement Locker Plant Offers Apartment House Tenants Ultra Convenient Service. March 14, p. 31.

Locker Plant Pushes Foil Wrapping— Free Foil Packaging of Meat Spurs Use of Better Materials. April 11, p. 15.

Locker Operator Finds It Pays To Show Off His Refrigeration Equipment. April 11, p. 20.

Locker Plant's 'Free Processing' Ticket for New Freezer Owners Helps Dealer Too. June 13, p. 43.

Meat Purchases Rise 50% After Market Adds Locker Plant. June 13, p. 52.

Frozen Foods Really Rolling, Says Packer Who Advises Lockermen How To Cash In. Sept. 12, p. 15.

Increase in Processing Services Can Help Locker Plants To Meet Rising Costs of Operation, NFFLA Speaker Declares. Sept. 12, p. 14.

Cooperating with School Lunch Programs Seen Big Chance for Locker Plants To Establish Frozen Food Eating Habit Early. Sept. 19, p. 27.

Locker Plants Should Advertise More To Sell Public on Savings. FFLI Speaker Declares. Oct. 17, p. 56.

Servicing

SERVICING, GENERAL AND AIR CONDITIONING

Contractor Solves Guarantee Problem— 90-Day Free Service and 1-Year Parts Replacement Explained on Printed Form Which Eliminates Most Misunderstandings. Jan. 17, p. 24.

Use of No. 35 Brazing Alloy on Stainless Steel Evaporators To Insure Proper Results Explained by Norge Engineer. Jan. 24, p. 27.

Outline of Producer, Wholesaler, Dealer Service Responsibilities. April 4, p. 13.

What Dealer Needs To Set Up, Operate Service Shop. April 11, p. 29.

'Daily Report' Form Helps Servicemen Note Whole Story on Prospects Found on Calls. April 25, p. 10.

Adequate Cost Records Help Service Firm Operate Profitably, Reed Tells RSES. April 25, p. 19.

Production of Out-Moded Replacement Parts in Frigidaire 'Service Factory' Demands Keen Planning. April 25, p. 24.

Air Conditioning, Costly Field To Enter, Holds Special Problems for Servicemen. May 2, p. 20.

Keen Knowledge of Structure, Performance of Motor Relays, Protection Needed for Servicing—by J. A. Bagnall. May 9, p. 22.

Dealer's Inventory Plan Keeps Constant Check on Repair Tools. June 20, p. 19.

Service Bill Form Eliminates Complaints, Let's Customers Know Just What's Been Done. July 4, p. 9.

Unique Work-Shelf Arrangement Helps Shop Handle Reconditioning Quickly. Oct. 17, p. 2.

'Winterization' of Room Air Conditioners Offers Off-Season Work for Servicemen. Oct. 17, p. 61.

Maintaining Evaporative Condensers— Stimulated Tropical Conditions Encourage Corrosion, Clogging. Oct. 31, p. 9.

Selecting Refrigeration Oil—Determining Its Viscosity, Pour Point, Neutralization Number, and Wax Separation Level Prove Best Means of Judging Oil. Oct. 31, p. 20.

Wholesaler Displays Make Big Difference 1. Data from Counter Display Dial Aids Patrons in Proper Tubing Selection. 2. Hiring High School Boys to Keep Racks Clean Increases Display Effectiveness. Oct. 31, p. 13.

Room Cooler Layaway—Winter Servicing Plans Give Customer Choice of Storing Unit on Premises or with Dealer. Nov. 14, p. 10.

Making Money on Service? A Dealer With 30 Years of Experience Tells of Kind of Records Needed to Find the Answer. Nov. 14, p. 22.

Where Should Refrigeration Service Firm Advertise To Get Maximum Response? Nov. 14, p. 39.

'Koldwel' Process Claimed To Simplify Job Welding Work. Nov. 14, p. 70.

Money End of Service Work—Adequate Records Help in Setting Service Charge, Figuring Income Tax. Dec. 5, p. 8.

The Drake Story—How One Small-Town Refrigeration Man Overcame Crippling Odds To Succeed with Service-Contracting Business. Dec. 19, p. 8.

SERVICING REFRIGERATION EQUIPMENT

\$3 December Special Keeps Servicemen Busy. Jan. 3, p. 12.

Four Methods of Dehydrating Assembled Systems in the Field Outlined by Carter. Jan. 10, p. 26.

Servicemen Can Install Capillaries If They Follow Correct Procedures. Jan. 31, p. 18.

The Oil Separator, by Reducing Formation of Film and Sludge and by Preserving Heat Transfer Rate, Acts as Refrigeration System 'Trouble Shooter.' Feb. 7, p. 32.

\$1 Free Service Ticket Opens Door to Sales, First Call on Repairs. April 25, p. 15.

Modern Refrigeration Co. in Detroit Employs Factory Proven Devices and Methods in Rebuilding Sealed Units. June 20, p. 20.

Maintenance Contracts Pay Off Despite Drawbacks. June 27, p. 13.

Liquid Dehydrant Travels Through a System in 42 Seconds, Tests on Conventional Unit Show. Aug. 22, p. 27.

Service Firm Tells How It Fixes Old Frigidaire Sealed Systems on Flat Fee Basis for Dealers. Oct. 17, p. 48.

Starting Up the System—Instructions and Procedure for Refrigeration Systems— Testing, Charging, and Starting Methods Outlined. Oct. 17, p. 53.

Though Simple, Capillary Tube Will Require Care in Its Application. Speaker Cautions RSES Group. Oct. 17, p. 16.

During Job, Serviceman Makes Record of Possibilities for Future Repair Work. Nov. 14, p. 56.

What Are Big Factors Involved in Applying, Adjusting Standard Refrigeration Controls? Nov. 14, p. 58.

Close Control over Costs Important Key To Success in Service—Complete Records Made Daily Give Chicago Firm Exact Status of Its Accounts at All Times. Nov. 14, p. 64.

RSES Speaker Cites Importance of Diagnosing Hermetic Trouble in Field. Dec. 5, p. 19.

(Continued on next page)

FREE—Your Copy of the 1949

AUTOMATIC CATALOG

AUTOMATIC's new 164 page WHOLESALE Catalog is now on the press . . . yours on request! And, with it, you get our free price service, if you desire it. Write for your copy of the catalog now, on your business letterhead.

Automatic Heating & Cooling Supply

Div. of WEIL-McLAIN COMPANY
647 W. Lake St., Chicago 6, Ill.

BETTER COILS... FOR BETTER COOLING

**Marla BALL BONDED
COILS**

COMPARE... 6¢ PER BUSHEL* FOR PERFECT ICE CUBES



- Large Production Capacity
21 Quick Release Trays—
16 Cubes Each
- Greater Storage Capacity
1025 Cubes Plus
336 Cubes in Tray
- All-In-One Unit
- Designed For Economy

By comparison alone, La Crosse leads the field with their Ice Cube Maker. The final test—PERFORMANCE—makes La Crosse the buy for beauty, economy and efficiency. With a large production capacity turning out the perfect cubes your customers demand AND the storage capacity to meet a large business volume, the La Crosse Ice Cube Maker is your guarantee of customer satisfaction.

*Approximate—will vary depending upon local electric rates.

LA CROSSE COOLER CO.

2809-17 Losey Blvd., So. La Crosse, Wisconsin
Export Representatives: Melvin Pine & Co.
Cable Address: Eximport, 80 Broad St., New York 4, New York

Lipman
REFRIGERATION and
AIR CONDITIONING

Complete Line—1/4 thru
40 hp., includes this 3-
hp., water-cooled, Freon-
12 unit.

General
Refrigeration
Division

Yates-American
Machine Company,
Beloit, Wisconsin

**VALVES FITTINGS
ACCESSORIES**

Superior

Valve and
Fittings Co.

PITTSBURGH 26, PENNA.

Guide to 1949 News Stories - -

(Concluded from preceding page)

Sales Training

Alert Dealers, Forward Thinkers Exploit National Advertising, Keep Salesmen on Toes, Drum Up Store Traffic, Feb. 28, p. 13.
Denver Dealer Salesmen's Pay Is Keyed to Overhead, Profit on Each Item, March 14, p. 2.
Commissions for Servicemen Ruled Part of Base Pay by Wage & Hour Division, April 25, p. 1.
York Distributor Writes Own Sales Manual Giving 14 Proven Sales Closing Methods, April 25, p. 6.
'Practisale' Technique Enables Salesman To Find Prospect's Specific Needs, Then Sell Him Most Suitable Appliance Model, June 13, p. 41.
Salesmanship—As an Instrument for Cutting Production Costs, Reducing Public Apathy, It Needs More Emphasis in Distribution Programs, Sept. 19, p. 6.
It Doesn't Take Tricks, Stunts To Get Orders, Just Work, Vision, Personality, and Knowing When To Stop Talking, Sept. 19, p. 19.
Toledo Plan Fails To Get Big Results, Tight Labor Market Cited by Officials as Drawback in Recruiting Salesmen, Sept. 26, p. 1.
Dealers Explain Why Toledo Plan Failed To Click, Oct. 3, p. 1.
Sales Training Forum—National Cash Register Co. and Frigidaire Outline Their Hiring and Sales Training Techniques for ACRMA Group, Oct. 31, p. 10.
NRC's Outline of Procedure for Covering Each Step of the Sale, Nov. 14, p. 25.
Dealer's System for Figuring Allowances Gives Salesman Share in Firm's Profit or Loss, Nov. 14, p. 30.

Texts

Text of NLRB Order Which Rules Appliance Servicemen Are Not Skilled Craftsmen, Jan. 17, p. 3.
Standardized Pricing, Reconditioning Costs Are Keyed to Profitable Handling of Trade-Ins—by Herman Hantober, March 28, p. 8.
The Trade-In Problem—by Telson Fineman, March 28, p. 8 and May 2, p. 12.
Considerations in Selecting Sources of Heat and Other Factors in Heat Pump Installations, May 30, p. 25.
Essential Requirements of Mobile Refrigeration Outlined at Texas Shippers and Growers Convention (By John E. Hulse), Oct. 3, p. 22.
Carbonators—Complete Understanding of Their Operating Principles Will Help Refrigeration Men Make Proper Applications (By J. W. Archibald), Oct. 17, p. 58.
U. S. Commercial Refrigeration, Air Conditioning Making Deep Inroads Into South American Metropolitan Business (By L. C. Shannon), Oct. 17, p. 60.
Low Cost Distribution Comes Through Higher Efficiency, Not Penny Pinching (By Joseph Bildner), Nov. 14, p. 32.
School Cafeteria Equipment: Selecting Refrigeration Units Demands Knowledge of Mass-Feeding Problems (By W. F. Switzer), Nov. 14, p. 44.

Union Activities

Servicemen Denied Separate Status as Bargaining Unit by NLRB, Jan. 10, p. 1.
NLRB Ruling Curb Plumbers' Union in Alabama, April 11, p. 11.
Nip Butcher Union Effort To Restrict Frozen Food Sales in San Francisco, June 13, p. 1.
HPAC Balks at UA Resolution on Contractors, July 18, p. 1.
Company Must Regularly Supply Union with Data on Merit Ratings of Employees To Meet Bargaining Contract, NLRB Holds, Aug. 2, p. 25.
Self-Serve in Chicago Blocked by Meat Cutters, Nov. 7, p. 1.
United Association Wins NLRB Election in So. Calif., Nov. 7, p. 4.
Union Status in Appliance Field Is Confused, Nov. 14, p. 1.
Election Asked To Settle Union Row, Nov. 28, p. 1.

World Trade

GENERAL EXPORT

Electrical Current Characteristics in Foreign Cities, Jan. 10, p. 18.
Refrigeration Equipment Market in South Africa on Increase, Jan. 24, p. 18.
Survey Finds Only 43% of Canadian

Wired Homes Have Electric Refrigerators, March 21, p. 21.
ACRMA Opens Long Range Drive To Convince Foreign Governments that Refrigeration Is Essential, May 2, p. 21.
Iraq Controls Prices of Air Conditioners, Refrigerators, Oct. 3, p. 5.
U. S. Commercial Refrigeration, Air Conditioning Making Deep Inroads Into South American Metropolitan Business, Oct. 17, p. 60.

WORLD TRADE STATISTICS

Specialty-Built Low-Temp Cabinet Helps English Plant Process Wooden Propellers, Sept. 12, p. 17.
What It Takes To Sell Appliances in '49, Feb. 28, p. 13.
Good Management of Both New Refrigerator Sale and Trade-In Transaction Earns Salesman Bigger Return Under Store's Plan, May 2, p. 2.
Door to Door Selling Rings Bell Under Current Conditions, June 6, p. 1.
Working Model of Store Teaches College Students Merchandising Problems, Dec. 5, p. 5.

Serial Articles

REFRIGERATION PROBLEMS AND THEIR SOLUTION

By Paul B. Reed

Motor Trouble
Part I—p. 27, Jan. 3.
Part II—p. 31, Jan. 10.
Part III—p. 27, Jan. 17.
Part IV—p. 24, Jan. 24.
Part V—p. 17, Jan. 31.
Part VI—p. 35, Feb. 7.
Part VII—p. 31, Feb. 14.
A Frozen Condenser Problem in July, Part I—p. 18, Feb. 28.
Part II—p. 30, Mar. 7.
Refrigerants,
Part I—p. 31, Mar. 28.
Part II—p. 32, Apr. 4.
Part III—p. 35, Apr. 11.
Parts IV—p. 43, Apr. 18.
Part V—p. 27, Apr. 25.
Part VI—p. 28, May 9.
Part VII—p. 31, May 16.
Part VIII—p. 26, May 23.
Part IX—p. 31, May 30.
Part X—p. 31, June 6.
Part XI—p. 55, June 13.
Part XII—p. 24, June 20.
Part XIII—p. 25, June 27.
Hot Weather Hints
Part I—p. 23, July 4.
Part II—p. 31, July 11.
Part III—p. 24, July 18.
Part IV—p. 32, July 25.
Part V—p. 27, Aug. 1.
Part VI—p. 31, Aug. 8.
Part VII—p. 23, Aug. 15.
How To Compute Head Pressure
Part I—p. 27, Aug. 22.
Part II—p. 23, Aug. 29.
What Happened To Dave?
p. 27, Sept. 5.
Testing Compressor Discharge Valves
p. 31, Sept. 12.
Checking the Charge
Part I—p. 21, Sept. 19.
Part II—p. 23, Sept. 26.
Part III—p. 31, Oct. 3.
Defrost Timers
p. 19, Oct. 10.
Display Cases—Closed & Open Types
p. 54, Oct. 17.
A Review—30 Years of Refrigeration Service—p. 16, Oct. 31.
A Review—30 Years of Refrigeration Service—p. 24, Nov. 7.
A Review—30 Years of Refrigeration Service—p. 79, Nov. 14.
Theory & Experience
p. 19, Nov. 21.
TEV External Equalizer
Part I—p. 27, Dec. 5.
Part 2—p. 31, Dec. 12.
First Steps in Getting a Patent—p. 20, Dec. 19.

KEY TO AIR CONDITIONING

By James J. LaSalvia

Automatic Controls—p. 18, Jan. 8; p. 23, Jan. 10; p. 17, Jan. 17; p. 17, Jan. 24; p. 16, Jan. 31; p. 20, Feb. 7; p. 20, Feb. 14; p. 24, Feb. 21; p. 20, Feb. 28.
Piping Refrigerant, Water, Steam—p. 26, Mar. 7; p. 30, Mar. 14; p. 20, Mar. 21; p. 28, Mar. 28; p. 26, Apr. 4; p. 23, Apr. 11; p. 30, Apr. 18; p. 21, Apr. 25; p. 28, May 2; p. 31, May 9; p. 28, May 16.
Heat Insulation and Sound Control—p. 20, May 23; p. 22, May 30—II; p. 24, June 6—III; p. 32, June 13—IV; p. 18, June 20—V; p. 21, June 27—VI.

Selection of Steam Heating Coils—p. 24, July 4; p. 24, July 11; p. 22, July 18; p. 22, July 25; p. 24, Aug. 1.
Economics—p. 25, Aug. 8; p. 16, Aug. 15; p. 19, Aug. 22; p. 20, Aug. 29; p. 18, Sept. 5; p. 26, Sept. 12.

QUESTIONS & ANSWERS

Question: How Does One Calculate the Coil Size in Air Conditioning Jobs?
Answer: La Salvia Lists Considerations in Special Coil Design, with Sizing Formula—p. 22, Feb. 14.
Question: What Is Recommended Method of Installing, Operating Ventilating System For Cowbarn?
Answer: Outside Cold Air Should Be Mixed With Inside Moist Air To Produce 45°-50° F. & 70% r.h.—p. 22, Apr. 4.
Question: How Can Cool Water From Artesian Well Be Used In An Air Conditioning System?
Answer: Running 52° Water Through Coils Will Reduce Amount of Refrigeration Needed—p. 18, May 16.
Question: Will 5-ton Coil With Booster Fan Prove Sufficient To Cool 55-Person Tea Room?
Answer: Self-Contained Unit or Remote System Could Supply Needed 2,000 c.f.m. Of Air—p. 22, June 6.
Question: How Can Excessive Humidity Be Reduced In Fur Storage Vaults Served By 2-Compressor System?
Answer: User Should Either Add Insulation To Walls Of Vaults Or Install Additional Compressor—p. 20, July 11.
Question: How Can Air Distribution System Obtain 50-ft. Throw In Room With Low Beams?
Answer: Top of Moderately Sized Grille Should Be Positioned About 1-ft. Below Beams—p. 17, Aug. 1.
Question: Will Spot-Cooling Prove More Economical For Use In Garment Manufacturing Plant?
Answer: Spot-Cooling Usually Requires Twice As Much Refrigeration Because Of Heavy Load Factor—p. 18, Sept. 19.
Question: Should Thermal Expansion Bulb Be Located In Outlet Side of the Heat Exchanger?
Answer: Positioning Thermal Bulb In Discharge of Heat Exchanger Tends to Keep Valve Open—p. 36, Oct. 17.
Question: How Can 55,000 Cu. Ft. Pressing Room With 2,100 lbs. of Steam per hr. Be Conditioned?
Answer: Steam Should Be Trapped, Drawn Off With Exhaust Fans To Lower Refrigeration Tonnage.
Reader's Comment—LaSalvia's Reply—Data on Location of Thermal Expansion Bulb Clarified—p. 6, Nov. 21.
Questions: How Is Pressing Room A.C. Job Figured? How Can 7½-Ton Unit Handle 2,700 C.f.m.
Answers: Rule of Thumb Is 2 to 3 Tons per Press; High Temp., Large Air Motion Might Do It—p. 18, Dec. 12.

EXPORT ANALYSIS

By Eugene Rees

Northern Brazil's Markets Sparse Now But Watch Future Development Closely—p. 21, Jan. 3.
Mexico Battles Nature & Ignorance To Gain Higher Standard of Living for Its People—p. 18, Jan. 10.
Mexican Market for Refrigeration Equipment Evaluated; Distribution of Sales Outlined—p. 20, Jan. 17.
Argentina's Political Problems Upset Hopes of U. S. for Profitable Business Relations—p. 18, Jan. 24.
How Much Refrigeration Equipment Can U. S. Mfrs. Expect To Sell In Argentina?—p. 30, Feb. 7.
India, Pakistan 'Starve' for U. S. Goods, In Dire Need of Refrigeration, Air Conditioning—p. 28, Feb. 21.
Refrigeration Seen Playing Growing Role In Battle To Solve India's Food Problem—p. 16, Feb. 28.
Delhi-Area Demand for Industry Products Fixed at 7,000 to 15,000 Units a Year—p. 28, Mar. 7.
What Kind of Market Does Colombia Offer Air Conditioning & Refrigeration Industry?—p. 32, Mar. 14.
Where Will Industry Find Its Customers in Calcutta Marketing Area of India?—p. 20, Mar. 28.
'48 Export Data Reflects India's Progress; Market Potential of Madras Area Analyzed—p. 28, Apr. 4.
Bombay District Seen Absorbing 30% of Refrigeration Units Sent to India from U. S.—p. 22, Apr. 11.
Iran's Industrial Progress, Growing Trade With U. S. Bode Well for Industry Exporters—p. 21, May 2.
Indonesia Pictured as a Natural, Wide-Open Market for Industry Equipment—p. 27, May 9.
Low-Priced Electric Refrigerator Will Open Middle-Class Market in Indonesia—p. 23, June 6.
Export Figures Show Indonesia Is On Way To Becoming Prominent Industry Customer—p. 17, June 20.
How Can Industry Expand Export Volume In Face of World-Wide Dollar Shortage?—p. 24, June 27.
'48 Refrigerator Exports To Latin America Way Above Pre-War Despite All Obstacles—p. 18, July 11.
What Kind of Agency Should U. S. Firm Pick For Best Results in Foreign Sales, Service?—p. 20, July 25.
Chile Down But Far From Out as a Market For Refrigeration Equipment—p. 24, Aug. 22.
6 Latin American Markets Dominate Trade But 14 Others Should Not Be Overlooked—p. 24, Sept. 12.
Minor But Good Market Possible in Peru, Says Analyst, Urging Bigger Ad Campaigns—p. 16, Oct. 10.
Import Restrictions
(1) Anglo-Egyptian Sudan Through Brazil—p. 18, Oct. 31.
(2) British Colonies Through Colombia—p. 18, Nov. 7.
(3) Costa Rica Through El Salvador—p. 61, Nov. 14.
(4) Ethiopia Through Honduras—p. 16, Nov. 21.
(5) Hong Kong Through Indonesia—p. 24, Nov. 28.
(6) Iran Through Liberia—p. 22, Dec. 5.
(7) Malayan Federation Through New Zealand—p. 24, Dec. 12.
(8) Poland Through Sweden—p. 18, Dec. 19.

Keystone Stores Name Silkwood Sales Mgr. For Appliances

CHARLESTON, W. Va.—I. M. Silkwood, formerly associated with the Libbey-Owens-Ford Glass Co. of Pittsburgh, has been named appliances sales manager for the Keystone stores, Frigidaire dealer, who operates two large appliance stores here.

A recent graduate of the Frigidaire Sales Corp. training school, Silkwood has announced extensive promotional plans for appliance volume-building within the Charleston territory.

In taking over management of the two large stores, he was accompanied by A. G. Swain, who is district sales manager for Frigidaire Sales Corp.

Ex-Employees Buy Dealer's Home Appliance Business

CHEYENNE, Wyo.—Paul Fintus and William Heath, former employees of the Simpson Electric Co. retail appliance store at 1819 Carey Ave., have purchased the business and its stock and will operate under the name of Automatic Electric Co., featuring Hotpoint major appliances.

The Simpson company has opened a new contracting office at 920 East 15th St. where it will continue to offer specialized services in electrical contracting, electrical supplies and fixtures, electrical repair service and engineering and design.

Air-Tite Changes Name

BRONX, N. Y.—Air-Tite Refrigeration Corp. has changed its name to Larco Refrigeration Corp.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$5.00 per insertion. Limit 50 words. 10¢ per word over 50.

RATES for all other classifications \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count. Please send payment with order.

POSITIONS WANTED

CAREFULLY SELECTED group of trained men, graduates of reliable and well established trade school now available to fill positions in the radio or refrigeration field. Willing to travel anywhere. Why not fill that vacancy with an efficient and reliable man? Write EASTERN TECHNICAL SCHOOL, 888 Purchase Street, New Bedford, Mass.

SALES ENGINEER 15 years experience. Domestic and export. Sales, installation, service, correspondence. Familiar commercial and industrial, compressors, cabinets, valves, evaps, parts. Age 35 yrs., Anglo-Saxon, neat appearance, pleasant personality, ambitious. New York City resident. GEORGE LEETH, 654 Bayridge Ave., Brooklyn.

AVAILABLE IMMEDIATELY, background 36 years refrigeration (only three companies), erecting, operating, sales engineering, district manager, all large ammonia equipment. Progressive, alert, creative. Producer, prefer district management, or field sales engineering contacting distributors, large equipment or components where earnings will be tops through salary, bonus, and/or commissions. Patentee, dozen patents. Age only 53. Will carefully consider any territory and complete details in first letter. Well known with exceptional contacts one phase of industry. Promptness and permanence paramount consideration. BOX 3380, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

OPPORTUNITY—CARRIER Corporation has openings for district commercial refrigeration managers and merchandising managers for South and Mid-west locations, due to expansion of field sales organization. Must be high calibre, having successful sales record and experience in contacting distributors and dealers. Write in c/o Personnel Division, Syracuse, N. Y., giving educational background, companies worked for, position held, earning record, family status and recent photograph.

MIDWEST JOBBER requires high type young man with refrigeration wholesale experience. Wonderful opportunity for right man with well rated company. All replies held confidential. Address BOX 3373, Air Conditioning & Refrigeration News.

DESIGN-DEVELOPMENT engineer. Well known Middle West manufacturer of controls has immediate employment for an engineering graduate. Three years experience in refrigeration engineering and/or three years design-development experience on electrical or mechanical control devices required. Designer must execute projects from idea through the completed drawings. Please give age, education, experience and salary expected in first letter. All replies confidential. BOX 3374, Air Conditioning & Refrigeration News.

WELL ESTABLISHED distributor York air conditioning and refrigeration equipment wants sales engineer for Connecticut territory. Five figure position which requires graduate engineer with successful background of business, estimating, retail sales, contract and installation experience. Domestic, industrial oil burner and heating experience desirable. Future possibilities are unlimited. Give full details, confidential. BOX 3376, Air Conditioning & Refrigeration News.

MANUFACTURER WANTS a straight commission representative capable of earning \$10,000 yearly up. This man should know the refrigerated fixture business and have a distributor following. Our equipment is self-contained, self-service standard and lo-temp merchandising cabinets. Dealer and consumer acceptance high. Commissions above average. BOX 3377, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

WHOLESALE SEALED unit exchange and rebuilding. We will rebuild and convert your unit to "Freon-12." One year guarantee. Write for price list and shipping instructions. ADVANCE REFRIGERATION COMPANY, 829 East McNichols Road, Detroit 8, Michigan.

HEAT EXCHANGERS and receivers. Various sizes. Brand new in original crates at less than manufacturer's cost. BIMEI CO., Cincinnati, Ohio.

POPULAR MAKE sealed unit heads. "F-12" for domestic replacement, \$23.00 F.O.B. Detroit. New relays 40% less than wholesale. Sealed unit rebuilding service, complete unit or head. (As is) refrigerators, \$5.00 to \$10.00 F.O.B. Detroit. Write for complete price list. BRIGHT'S REFRIGERATION, INC., 14410 East Jefferson, Detroit 15, Michigan. Valley 2-5955.

AIR COOLED 3 h.p. air conditioning units. Total B.T.U. output 30,000, single phase, 220 volts. New in crates—real bargain \$600.00, f.o.b. Brooklyn. C.D.E. REFRIGERATION CO., 1002 60th Street, Brooklyn 19, New York, GEedney 6-9090.

VACUUM COLD plates, four 22" x 48" and five 22" x 60", each set complete with stand. Factory seal has not been broken. \$145.00 for both units f.o.b. Indianapolis. Will sell units separately or plates individually. Write E. C. LEISURE, 109 Woodside Ave., Indianapolis 19, Indiana.

STANDARD BRAND condensing units complete with motors: ½-HP @ \$45; ¾-HP @ \$52. Net f.o.b. NYC. 110 V 60 cycles. All brand new in original crates. Limited quantity. Act now. Specifications upon request. MANN REFGN. SY. CO., 15 Astor Pl., New York, N. Y.

MANCO TWELVE tray ice cube maker less unit for remote installation. Special price \$45 f.o.b. NYC. Rust-resisting metal; 3" insulation; brown baked enamel finish. Equipped with twelve Roto trays. 26" high, 21" deep, 20" wide. MANN REFGN. SY. CO., 15 Astor Pl., New York 3, N. Y.

BUSINESS OPPORTUNITIES

FOR SALE: Refrigeration sales and service handling nationally known commercial and domestic refrigerators and counter equipment. \$70,000 yearly gross can be greatly expanded. Due to illness will sell for inventory with or without building. Located in Midwest. Address BOX 3378, Air Conditioning & Refrigeration News.

SCHOOLS

DETROIT AIR CONDITIONING Institute is accepting applications for enrollment in spring term classes starting January 31, 1950. Fully GI approved courses in air conditioning, refrigeration, heating, ventilating, sheet metal layout, heat pump engineering. Write for free information. DETROIT AIR CONDITIONING INSTITUTE, Dept. D, 4125 Grand River, Detroit 8, Michigan.

MISCELLANEOUS

NORGE SEALED units remanufactured and exchanged. Immediate delivery from stock, 1 year guarantee. Write for prices and shipping instructions. Complete Norge engineering service. 22 years experience. MODERN REFRIGERATION CO., INC., 12541 E. McNichols Road, Detroit 8, Michigan.

EXCEPTIONAL OPPORTUNITY FOR EXPERIENCED REFRIGERATION ENGINEER

What we are thinking of is a YOUNG MAN, with good technical training PLUS a certain amount of actual design and production experience. One who knows capillary systems and who can supervise and cooperate with all departments in both the designing and manufacturing of all types of COMMERCIAL REFRIGERATORS as well as assist in the preparation of service manuals. We are one of the country's largest and busiest Eastern manufacturers in this field—our financial rating is tops and our standing is excellent. A good man will have a free hand, strong managerial support and UNLIMITED EARNING CAPACITY depending on ability. If you think you can qualify, please write giving all essential details. Completely confidential. Address Box 3379, Air Conditioning & Refrigeration News.

Subscribe Now

Receive the greatest trade paper in the Industry—AIR CONDITIONING & REFRIGERATION NEWS. Published every week. Brings you latest news and vital information on household refrigeration, commercial refrigeration, air conditioning, home freezers; manufacturing, distributing, retailing, servicing, and contracting. Only \$5 per year, 52 issues.

Fill in coupon and mail today

AIR CONDITIONING & REFRIGERATION NEWS
450 West Fort Street, Detroit 26, Michigan

Gentlemen: Send the NEWS for one year.

☐ \$5 enclosed ☐ Bill me ☐ Bill the company

Name.....

Company.....

Street.....

City..... Zone..... State.....

12-26-49



World Import Restrictions Affecting Air Conditioning & Refrigeration Equipment

(Nicaragua Through Philippine Republic)

With this article we present another in the special series of studies on the present-day import regulations pertaining to our industry. This information has been collected from all parts of the world with the active assistance of the U. S. Department of Commerce, Washington, D. C., and its District Office in Detroit. American export figures for the year 1948 will be added. Our readers are advised to retain these articles, as they appear, as a similar publication has, so far, not appeared in the press.

The countries will be treated in alphabetical order. Wherever available, late information—dated June to August, 1949—on developments of imports of the products of this industry from the United States will be added.

By Eugene Hesz, International Market Analyst and Instructor, University of Detroit

NICARAGUA

Nicaragua is one of those Central American states where the dollar situation is not too good. Therefore, import licenses are needed.

All foreign commodities have been divided into groups, numbered with regard to their preference. The import license, once obtained, authorizes purchase of exchange. The exchange is closely rationed but there are no surcharges on exchange in Nicaragua.

Refrigerators are not specifically mentioned in the category lists, which means they must be considered to fall under "items not otherwise mentioned" in Category 3. Import permits are presently being issued for virtually nothing outside the Preferential and First Categories.

Since, despite the above restrictions, our exports to Nicaragua are proceeding, it is worth noting here

that most dollar collections last fall were settled within four weeks after their arrival, according to the Chase National Bank of New York City.

Our exports in 1948 amounted to: Domestic refrigerators, \$113,000; parts for same, \$13,000; commercial refrigerators, \$63,000; miscellaneous refrigeration and air conditioning equipment, \$15,000; auxiliary equipment, \$14,000; replacement parts, \$8,000; and ice making equipment, \$34,000. The total of these exports was \$260,000.

NORWAY

Import licenses are required and their issuance depends upon the degree of the need for the commodity in question. After the permission has been received, an authorization to transfer foreign exchange must be obtained from the Bank of Norway and will be registered on the

import license. After this procedure is followed successfully, there is no delay in the payment.

The Norwegian market deserves continued favorable attention for many reasons. One of these is the fact that Norway has an abundance of natural water power which is partly transformed into electric current to such a degree that the per capita production of electricity in that country is among the very highest in the world.

Our exports in 1948 amounted to: \$71,000 for domestic refrigerators; \$10,000 parts for same; \$17,000 for commercial refrigerators; \$72,000 for miscellaneous refrigeration and air conditioning equipment; \$45,000 for auxiliary equipment; \$6,000 for replacement parts; and \$1,000 for ice making equipment, a total of \$222,000.

PAKISTAN

Pakistan has a government-controlled import licensing policy. This policy finds its residue in a list of "licensable" articles which may be imported from hard currency countries including the United States.

Despite the fact that the products of the air conditioning and refrigeration industries are not specifically mentioned on this list, we are informed by the Middle East Branch of the Department of Commerce that domestic refrigerators may be imported into Pakistan from the United States. Commercial equipment may also be shipped upon receipt of the license which will be granted.

Foreign exchange is automatically released upon the presentation of the validated import license to an exchange bank. In the fall, the majority of licensed imports were paid on arrival.

Despite the following rather disappointing export figures, this market might develop. At present, Pakistan is producing quite some natural raw materials for the industries of the neighboring India, but a purposeful, if limited, industrialization program, to be carried out in a partly tropical climate, is underway.

Our exports in 1948 were only \$46,000 for domestic refrigerators; \$5,000 for parts for same; \$4,000 for commercial refrigerators; \$9,000 for miscellaneous refrigeration and air conditioning equipment; \$4,000 for auxiliary equipment; \$2,000 for replacement parts; and \$6,000 for ice making machinery. This adds up to \$76,000.

PANAMA

Since the Panama Canal Zone is held by the United States under a lease agreement, only the Republic of Panama needs mentioning here. There are no restrictions with regard to the products of our industries, neither for importation nor for foreign exchange purchases. The exports from this country to the Republic and to the Canal Zone are listed together in the documentation of the United States (see table).

PARAGUAY

The dollar situation is not favorable but there are no official restrictions on imports. However, the importers must conclude a contract for the purchase of foreign exchange

U. S. Exports of Refrigeration and Air Conditioning Equipment to the Philippines In 1948

Commodity	Units	U. S. Dollars
Household refrigerators	7,594	\$1,187,000
Household refrigerator parts	.....	95,000
Self-contained commercial refrigerators	2,126	506,000
Mechanical commercial refrigerators	188	74,000
Miscellaneous refrigeration and air conditioning equipment	.....	191,000
Self-contained air conditioners	.....	.....
Under 2 tons	289	114,000
2 tons and over	44	78,000
Auxiliary equipment	.....	445,000
Assembly parts	.....	38,000
Replacement parts	.....	85,000
Ice making equipment	.....	418,000
Total	.....	\$5,231,000

with the Bank of Paraguay before purchasing abroad.

Although there are no customs restrictions on the importation of either domestic or commercial refrigerators into this country, the shortage of dollars makes it necessary that only the most essential refrigeration needs be purchased in the United States.

Little or no exchange is currently being made available for the importation of domestic refrigerators. In general, the exchange situation was fair in the fall of 1949. Payment of invoices, including time needed for clearance of the goods, is suffering delays of a maximum of about four months.

In 1948, this country exported to Paraguay domestic refrigerators for \$25,000; parts for same for \$1,000; miscellaneous refrigeration and air conditioning equipment for \$22,000; commercial refrigerators for \$12,000; auxiliary equipment for \$16,000; assembly parts for \$4,000; replacement parts \$2,000; and ice making equipment for \$20,000. The total of these exports amounted to \$102,000.

PERU

Since the beginning of this year (1949), imports are no longer unrestricted and a list of permitted items has been issued by the Peruvian government. In this list we find the following items of interest for our industries mentioned:

2791: Electrical refrigerating apparatus of any kind, complete or incomplete.

2792: The same, if externally enameled by means of faience or porcelain.

2793: Non-electrical refrigerating apparatus of any kind, complete or incomplete.

2794: The same, if externally enameled by means of faience or porcelain.

2795: Spare parts for refrigerating apparatus of any kind.

According to the latest information available, it appears that the items mentioned under No. 2795 are the only ones which can be imported quite freely, at the moment.

Exchange permits are required in every case. Our exports to Peru in 1948 have been mentioned in detail in the economic study having special regard to the outlook for the refrigeration and air conditioning industries, published in these columns in October, 1949. The most important items were:

Domestic refrigerators for \$242,-

U. S. Exports of Air Conditioning and Refrigeration Equipment To Republic of Panama and Canal Zone In 1948

Commodity	Units	U. S. Dollars
Domestic refrigerators	3,191	\$ 513,000
Domestic refrigerator parts	.....	57,000
Commercial refrigerators	859	258,000
Miscellaneous air conditioning and refrigeration equipment	.....	57,000
Self-contained air conditioners	104	49,000
Auxiliary equipment	.....	119,000
Assembly parts	.....	8,000
Replacement parts	.....	16,000
Ice making equipment	.....	58,000
Total	.....	\$1,135,000

000; parts for same for \$19,000; commercial refrigerators for \$29,000; miscellaneous refrigeration and air conditioning equipment for \$65,000; auxiliary equipment for \$113,000; replacement parts for \$2,000; and ice making equipment for \$11,000. These exports add up to \$481,000.

PHILIPPINE REPUBLIC

The Philippines appear to be one of the interesting markets, full of prospects for American firms engaged in manufacturing and exporting air conditioning and refrigeration equipment. A full survey of this potential market, completely up-to-date, will appear in these columns early next year.

With regard to import restrictions, two main factors must be mentioned, always against a background of a strong potential demand.

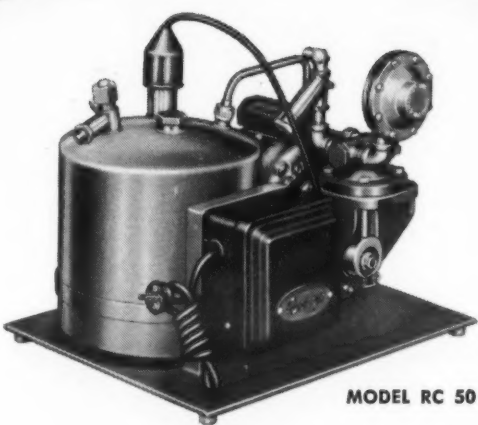
In the first place, it is a fact that import licenses are necessary—not for all articles—and that the number of the import license must appear on the consular invoice. An exchange license is not required.

However, a report to *The New York Times* of Nov. 30 indicates that electrical apparatus imports will be reduced 50 to 90%. The president of the Philippines explained this measure, which hits many other products of other industries, too, as an earnest attempt to preserve the dwindling dollar reserves and prevent a collapse of the Philippine economy.

Up to the time of this announcement, the products of our industries were on the free list and it is not yet known here which items have been specifically reduced by the new restrictions. Interested parties are advised to obtain this information directly from the Far Eastern Branch, OIT, Department of Commerce, Washington, D. C., where the detailed information is expected momentarily.

(To Be Continued)

IT'S HERE! The New SUPER-MITE CARBONATOR by Everfrost



MODEL RC 50

Here, ready to bring new profits to you and better beverages to your customers is the revolutionary Everfrost Super-Mite Carbonator. The newest addition to the famous Everfrost line of Soda Fountains, Carbonating Equipment and Drink Dispensers.

The Super-Mite is a complete carbonating unit so small and so light it can be installed in any convenient location; yet large enough and powerful enough to reliably supply fifty gallons of high volume carbonated water every hour.

Fully automatic, the Super-Mite is ruggedly constructed to give years of trouble-free service.

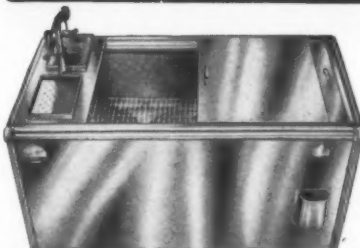
ORDER DIRECT OR WRITE FOR ADDITIONAL INFORMATION TODAY

ANDERSON & WAGNER INC.
8701 South Mettler Street • Los Angeles 3, Calif.

- 50 gallons per hour capacity
- Only 14" x 17" x 13" high
- Weighs only 65 pounds
- Diaphragm type pump
- Easy to install

Dealer
Net Price
ONLY
\$125.00
F.O.B. Los Angeles
Complete with gas
gauge and regulator.

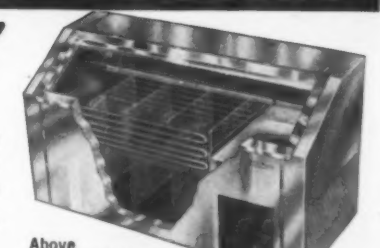
AMERICA'S FINEST BEVERAGE COOLERS



"Beveco Maid"

Four sizes in each model... capacity range from 5 to 50 cases, here is the an-

swer for fast, low-cost, trouble-free cooling... Write for literature and complete details.



Above Model B180, Stainless Steel Exterior, with #2820 Double-Spout Water Equipment.
"B" Models... Wet or Dry Operated Coolers.
4 Sizes—4, 5, 6 & 6 1/2 Ft.

The BEVCO Company, Inc.
3110 N. 11th Street • St. Louis 7, Mo.

Above Model DB6-21 Dry Cooler, S.S. Exterior, with Fin-Coil Construction. No Blower Necessary.
"DB" Models... Dry Counter-Type. 4 Sizes—4, 6, 8 & 10 Ft. Self-Contained or Remote Units.

CHOICE OF THE TRADE IS THE "BEVCO-MAID"

ASHVE, Southwest Show Set for Jan. 23-- Locker Groups Agree--

(Concluded from Page 1, Column 4) parts of air conditioning systems, including boilers, furnaces, motors, ducts, registers, diffusers, cooling coils and towers, control devices, piping, valves, filters, and the like.

Entering the national field for the first time will be a "Magic Dial" basic control system which, it is claimed, permits standard controls for air conditioning, ventilating, or heating to be operated through a single switch.

A new refrigeration compressor will be shown by one exhibitor in cutaway form operating at slow motion.

An advanced design of electrostatic dust precipitator claimed to have several new features is also scheduled to be unveiled. This has a "desk drawer" method of assembly said to permit the cells to be easily and instantly withdrawn from the framework for servicing, each cell being a complete filter in itself containing both ionizer and collector plates in unit construction. The power supply is said to include an exclusive voltage control system never before employed in this type of construction.

Of special interest to air distribution men will be a new low velocity air diffuser for which it is claimed that by raising the diffusion temperature differential from the usual 15° to 25°, a 40% economy in air volume may be safely calculated and reflected in economy in ducts, fans, filters, and coils.

Associated with a display of air recovery systems designed to decrease the operation of air conditioning systems by purifying recirculated air, is a "food saver," a compact unit using activated carbon in a filter unit to extract odors from coolers and storage rooms.

Radiant or panel heating methods, which continue to arouse considerable attention within the trade and among the public, will be featured in some of the displays at the exposition.

G-E Appliance Sales Down 10% In '49, See Rise In '50

NEW YORK CITY—A decrease of approximately 10% in General Electric appliance sales during 1949, both unit and dollarwise, was noted recently by H. L. Andrews, vice president in charge of appliance operations.

Andrews indicated, however, that the company anticipates that its appliance and electrical housewares business will increase about 5 to 7% in 1950.

He noted that G-E is still studying the effects of the recent rise in the price of steel and what it may mean to G-E's appliance prices.

tion, including a pre-fabricated finned tube coil for attachment to the back plate and a snap-on grille.

To gain admission to the exposition, visitors need merely fill out a simple registration card, but admission will be restricted as usual to persons having business, professional or industrial relations affording them a special interest in air conditioning, heating, or ventilating, according to Charles F. Roth, manager of the exposition, which is being staged by the International Exposition Co. E. K. Stevens is associate manager.

Those eligible to attend would include dealers, distributors, contractors, consulting engineers, designers, architects, engineers, manufacturers, educators, and the like.

Serving on the advisory committee of the exposition are several national and local officers of ASHVE. Chairman is A. E. Stacey, Jr., ASHVE president. Others include C. Rollins Gardner and Reg. F. Taylor of the council; Dr. F. E. Giesecke, past national president; and the following presidents of local chapters:

R. B. Guest, Delta chapter; W. R. Lee, Northeastern Oklahoma; G. A. Linskie, North Texas; A. H. Otto, Shreveport; George R. Rhine, Southwest Texas; R. J. Salinger, South Texas; and H. S. Shafer, Oklahoma.

Westinghouse Line--

(Concluded from Page 1, Column 5) which is said to have the largest capacity of any home dishwasher, represents six years of engineering development and consumer testing, according to the company.

In four separate automatic cycles, it first washes off food waste, follows this with five-minute washing action, two one-minute rinses, and a 22-minute drying period. It uses 140° F. water so that the dishes are sanitized as they are washed.

The washer well holding the dishes slides out like a drawer to retain the convenience of top-loading from an unbroken counter surface above.

Capacity is 64 pieces of dinnerware plus silverware. This is the equivalent of a dinner service for eight or the cooking utensils and all dishes and silver for a family of four.

The dishwasher comes in three models. In a 48-in. electric sink model, it is priced at \$374.95. A 24-in. free standing cabinet job is priced at \$284.95. The under-counter, or builder's model, carries a tag of \$254.95.

Ever-Last Furniture Moves

TORONTO, Ont., Can.—Ever-Last Furniture Co., appliance dealer, has opened its expanded quarters at 361 Oakwood Ave.

(Concluded from Page 1, Column 2) locker show. The spacious exhibition hall of the Palmer House will be filled with the latest equipment and supplies of all types for locker operators. A program of clinics, speakers, and demonstrations will be provided for the locker men.

Under the sponsorship of the NFFLA and FFLI it is expected that this will be the greatest gathering of locker men ever assembled. The clinics, speakers, and banquet will be available to all locker men, but each organization will hold its own business meetings, elections, etc.

The 1950 joint convention was announced by four executives of both organizations. Representing the NFFLA were President W. H. Hasebroock, and Vice Presidents A. L. Sprague, W. S. Winstead, and Roy Burns; representatives of the FFLI included President S. A. Scobell, Vice President E. E. Jackson, and Directors J. A. Smith and Bryce Vollmar.

The convention committee will have full power and authority to work out all the details of the 1950 convention and is composed of two officials from each organization as follows:

J. A. Smith, director, FFLI; A. A. Todoroff, executive secretary, FFLI; W. H. Hasebroock, president, NFFLA; and S. T. Warrington, executive secretary, NFFLA.

Fedders Honors Old Employees

BUFFALO—Twenty-one employees of the Fedders-Quigan Corp. who have completed 20 years of service were honored at a dinner in the Town Casino.

Detroit Violations on Fusible Plugs--

(Concluded from Page 1, Column 2) next revision, stresses not only the melting temperature of the fusible plug, but also the diameter of the bore.

As worked out by S. V. James of Underwriters' Laboratories, this formula is as follows for "Freon-12":

$$C = .135d^2P_1$$

where

C is the minimum required discharge capacity in pounds of air per minute,

d is the minimum diameter of the bore of the fusible plug, and

P₁ is the saturation pressure corresponding to the stamped temperature melting point of the fusible plug or the critical pressure of the refrigerant, whichever is the lower.

Note that the diameter of the bore of the plug is an important factor in this formula, because, as Rehard emphasizes, if the bore isn't large enough, refrigerant cannot escape fast enough even after the plug melts under such conditions as a fire.

This formula has been further developed to determine the proper sized bore because "C" (the minimum required discharge capacity) is a more or less fixed value determined by the formula:

$$C = fDL$$

where

D is the outside diameter of the vessel in feet,

L is the length of the vessel in feet, and

f is a factor dependent upon kind of refrigerant as follows: Ammonia, 0.1; "Freon-12," 0.3; all other refrigerants, 0.2.

Thus, the size of the bore to be filled with fusible metal would be

figured directly (for "Freon-12") from the following:

$$d = 2.73 \sqrt{\frac{C}{P_1}}$$

This particular formula is not included as such in Detroit's "Official Refrigeration Code," but the code does provide that "approved" fusible plugs be required under certain circumstances. The Bureau of Safety Engineering, of course, is the agency which must approve the plugs.

The sections of the Detroit code referring to the use of plugs are as follows:

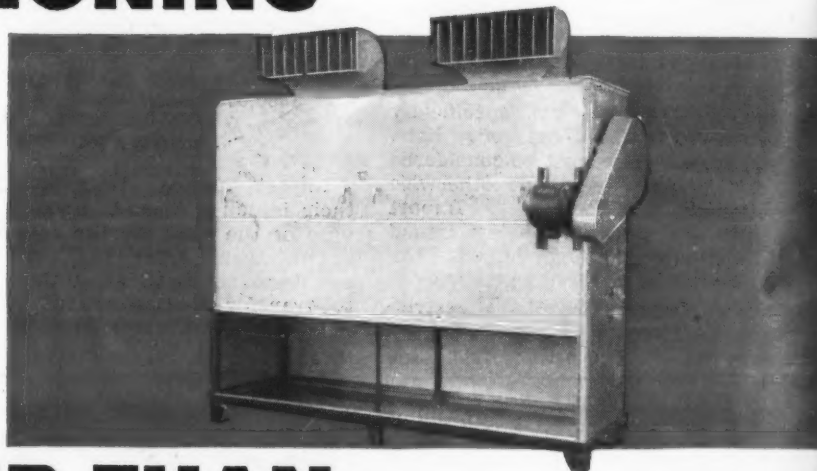
"Section 3013.3. Every system, except as provided in Sections 3013.4, 3013.5, and 3013.6, shall be protected by a pressure relief device unless so constructed that pressure due to fire conditions will be relieved safely by soldered joints, lead gaskets, fusible plugs, or other parts of the system.

"Section 3013.4. Each pressure vessel containing refrigerant and which may be shut off by valves, shall be protected by an approved pressure relief valve or other approved pressure relief device, if the volume exceeds five (5) cubic feet unless its diameter does not exceed six (6) inches.

"Section 3013.5. Each pressure vessel having a volume of five (5) cubic feet or less, containing refrigerant and which may be shut off by valves, shall be protected by an approved relief device or an approved fusible plug.

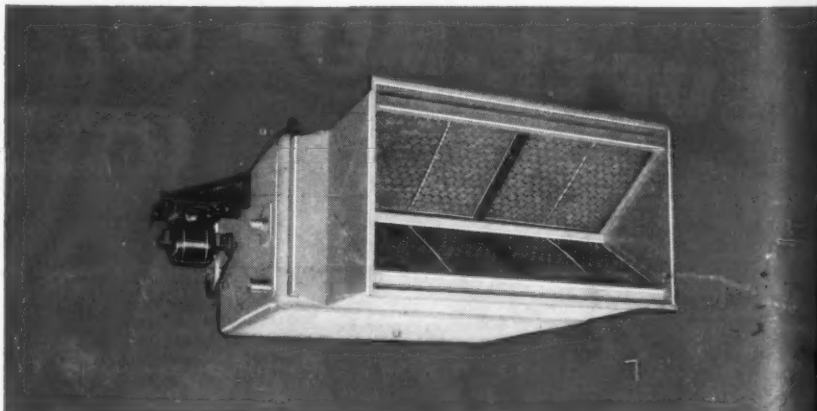
"Section 3013.6. The requirements of Sections 3013.4 and 3013.5 shall not apply to flooded evaporators located in a refrigerator cabinet."

AIR CONDITIONING



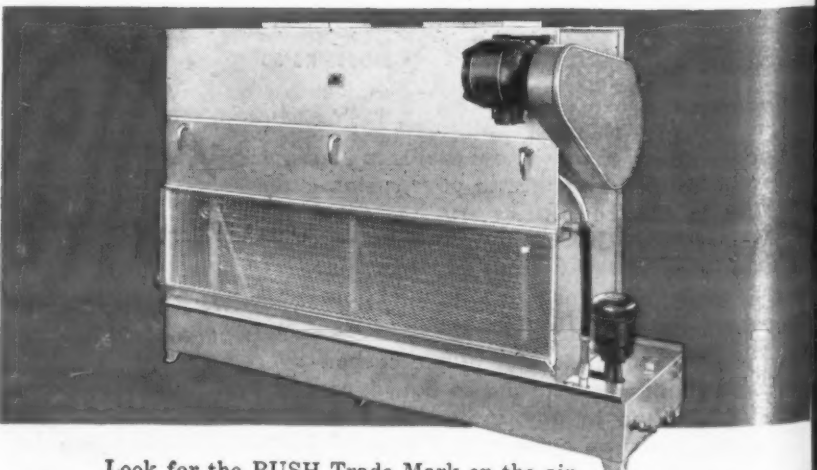
✓ **BUSH Heavy Duty Floor Type Cooler**
is built in two sections for quick, easy installation. Standard floor type units in capacities of 10 to 35 tons.

IS NO BETTER THAN



✓ **BUSH Heavy Duty Ceiling Type Cooler**
is the last word in scientific design and efficient operation. Standard ceiling units in capacities of 5 to 25 tons.

ITS PARTS...



✓ **BUSH Evaporative Condensers**
are supplied in capacities of 5 to 40 tons... with continuous tubing... centrifugal pumps... fibreglass eliminator sections (20 to 40 tons).

Look for the BUSH Trade Mark on the air conditioning units you buy... your guarantee of sound engineering, expert design, superior construction and finest materials. Get acquainted with the BUSH Factory Representative in your territory... he's a good man to know.

Write Dept. C-3 for booklets on Air Conditioning Units.



BUSH MANUFACTURING CO. • WEST HARTFORD, CONN.

Buy the Best—and the Best is Bush

... There is
Always a TOMORROW

It may be wise—at times—to be an opportunist. But it is never sound policy to jeopardize tomorrow for the sake of today. We adhere strictly to this principle in the conduct of our business. The character of the equipment which we offer is designed to build lasting good will, as well as to produce immediate sales.

Seventeen years ago this advertisement appeared in the News. Today Universal Cooler believes in the same high principles and operates on the same ethical policy.

UNIVERSAL COOLER
DIVISION NEWPORT STEEL CORPORATION
Marion, Ohio